# A long-term follow-up of personality disorders : Maudsley twin series.

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# Long-term Outcome in Personality Disorders

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# ABSTRACT

**Objectives** - A retrospective follow-up study, mean 13 years, of patients with a clinical diagnosis of personality disorder (PD), attending the Maudsley Hospital between 1967-89, to describe long-term outcome and identify predictors of outcome.

**Subjects** - 197 patients of twin birth and a control group of 153 living co-twins. Two patient cohorts: (i) Broadly-defined - clinican's diagnosis of PD, (ii) Narrowly-defined - DSM-III-R axis II categories.

**Method** - In two stages: independent data collection at index (casenote ratings) and at follow-up (research diagnostic interview) followed by multi-dimensional descriptive presentation of outcome data on individual PD categories. Identification of predictive variables, controlling for confounding diagnostic variables using logistic regression.

**Results** - Follow-up information on 79% of subjects confirmed a chronic course of PD for most cases, remaining stable over time. However, outcome could range from complete remission to suicide. Approximately one-third of the broadly-defined cohort and one-fourth of the narrowly-defined no longer qualified for an Axis II category at follow-up. Improvement correlated with length of follow-up. Global outcome indicated that 50% of the broadly-defined cohort functioned normally for more than 75% of the follow-up period, 22% continued to experience problems for 50% of the follow-up period, 14% were chronically impaired, and 10% were dead, most through suicide. In contrast, 80% co-twins had normal global functioning throughout the follow-up period and mortality was only 3.5%, mainly through natural causes. Robust predictors of poor global outcome included diagnoses of borderline and schizoid PD, comorbid major depression, lower educational standard, childhood sexual abuse, and delayed developmental milestones.

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# PLAN OF THE THESIS

The thesis consists of three main sections: **Part I** reviews the recent literature on the classification and assessment of personality disorders, and their long-term course and outcome. **Part II** focuses on the present investigation, describing the aims, sampling procedure, methods, and the results. The main purpose of the investigation was to examine the long-term outcome of a consecutive series of hospital patients with personality disorders who were twins. A retrospective follow-up design was used, over a mean period of 13 years, to evaluate the progress of all twin probands, and their co-twins, by collecting information from multiple sources including personal interview with subjects at follow-up, where possible. The results are presented in five separate chapters as follows: clinical status of probands at index, diagnostic stability over time, mortality findings, psycho-social functioning during follow-up, and prognostic factors predicting outcome in PD patients. Methodological issues relevant to the follow-up study are then discussed. Finally, **Part III** outlines the main conclusions of the study.

# CHAPTER 1.1. CLASSIFICATION AND ASSESSMENT OF PERSONALITY DISORDERS

## Introduction

It is only in the past two decades that researchers have paid close attention to the classification and assessment of personality disorders (PDs). Clinicians previously utilised the personality descriptions elaborated by Kretschmer (1922), Schneider (1923), Henderson (1939) and Cleckley (1941,1976) which were based on intuitive understanding; the failure to operationalise these diagnostic categories led to poor diagnostic agreement among them (Walton & Presly,1973; Plutchik & Platman,1977). The subclassification of personality disorders was not an area of nosology that attracted much research interest until the introduction, in 1980, of operational criteria for the diagnosis of mental state disorders (axis I) and personality disorders (axis II) in the Diagnostic and Statistical Manual of Mental Disorders - Third edition (DSM-III).

DSM-III had developed through the need to have more reliable diagnoses for research purposes. Consequently, much effort was directed, in the USA, towards devising reliable instruments for recording DSM-III personality categories. Similarly, standardised interview schedules were constructed in the UK by Tyrer et al (1979,1988) and Mann and coworkers (1981, 1990; Pilgrim & Mann, 1994) to improve the reliability of personality diagnoses using the International Classification of Diseases (ICD) format. Recent review papers on the assessment of personality disorders indicate that there has been considerable improvement in their diagnostic reliability (Tyrer,1987; Perry,1992; Zimmerman,1994); however, the validity of personality disorder measures still remains controversial. Although validation work has begun for certain categories, such as borderline and antisocial, in the form of aetiological factors (Coid,1996; Paris & Zweig-Frank,1993), and the natural history of these disorders (Robins,1978; McGlashan,1986; Stone,1990), further research is required to validate the full range of PDs. In this thesis, I will provide information on the long-term outcome of patients with specific PDs. I aim to validate specific DSM-III-R PD categories by focusing on their longitudinal course in order to see if they have a characteristic outcome which differentiates one PD group

from another. However, before I present my study, it is important to define personality disorders and the methods of diagnosis.

In this review chapter, the historical tradition of identifying people on the basis of an optimal set of dimensions or categories will be briefly traced, followed by an examination of the definition of personality disorders. Two recent classifications of personality disorders which are currently the most widely used in clinical settings will be considered. Attention will then focus on the assessment of PDs. A very brief historical overview will trace the methods used in diagnosing PDs earlier this century, and the progress that has been made in this field since 1980, following the introduction of DSM-III. The choice of instruments available for assessing PDs will then be presented, followed by a summary of the literature on the reliability of personality disorder diagnoses. In addition, certain issues related to the measurement of personality disorders, such as trait-state artifact, use of informants, interviewer training, content in different instruments, the categorical vs dimensional perspective, and diagnostic stability will be considered.

### 1.1.1. Historical Traditions

The Four Humours: The ancient Greeks developed a simple system of classifying individuals into one of four basic personality types: sanguine, melancholic, choleric and phlegmatic. These were considered to roughly correspond to the basic components of nature, ie. air, earth, fire & water. The four temperaments, or personality types, resulted from the relative balance or expression of the four bodily humours (blood, black bile, yellow bile & phlegm). A person could be classified according to the extent to which his or her behaviour was most influenced by a particular humour and imbalance of humours was considered to lead to abnormal personality types.

Physiognomy: Physical appearance is a readily observable measure of individual differences, and has traditionally been used to infer personality traits. Allport (1937) in his book, "Personality: A Psychological Interpretation", outlines this long tradition in psychophysical parallelism. The ancient Greeks had based personality characteristics on

physical similarities to various animals (eg. fox-like appearance, indicating slyness), racial stereotypes and facial expressions. Hippocrates, however, has been credited with identifying two fundamental physical types: the thin and weak "phythisic habitus" and the overweight, compact "apoplectic habitus". Kretschmer (1922) identified three physical dimensions (pyknic, asthenic & athletic) thought to be associated to three personality styles. A fourth type (dysplastic) resulted from an uneven mixture of the other three. Tall and slender asthenics were characterised as being introverted, formal, idealistic and romantic, with extreme variants predisposed to schizophrenia; whilst the short and heavy pyknics were moody, jovial, extroverted, objective and realistic, and with extreme variants predisposed to bipolar affective disorder (Allport,1937). Kretschmer's concept was later modified into Sheldon's endomorphic, mesomorphic and ectomorphic morphology. This has been further modified in Eysenck's (1981) psychophysical model of personality and continues in an attenuated form within the current search for biological markers of personality disorder (Siever et al,1983).

Clinical Descriptive Models: Attempts to define an "ideal type" that represents a particular personality style are based on the clinical tradition of observation and intuition. Examples include Prichard's (1837) concept of "moral insanity", Kraepelin's "premorbid" and "morbid" (antisocial) personalities, and Schneider's (1923) ten types of "psychopathic" personalities (ie. hyperthymic, depressive, insecure, fanatic, attention-seeking, labile, explosive, affectionless, weak-willed and asthenic). Schneider's classification was important in delineating a broad range of personality deviations but failed to differentiate clearly between syndromes of mental illness and personality types. Many typologies have been proposed over the years based on a wide range of traits with varying degrees of success (Henderson,1939; Cleckley,1976). Attempts continue at the present time, for example a recent typology proposed by Millon (1981) is based on the theoretical integration of many prior versions and bears some similarities to the DSM-III taxonomy.

Psychoanalytic Models: The discipline of psychoanalysis provided a major contribution to the modern concept of personality. After several years of psychoanalytic study, Freud (1938) became interested in the character expressions of unconscious drives, fears, and

defences that he had previously identified within symptomatic conditions. His contributions, and those of his followers, largely shaped the clinical descriptions of, and subsequent theorising about, the hysterical, narcissistic, obsessive-compulsive, masochistic, phobic and melancholic characters. Other psychoanalysts later noticed that certain patients decompensated during analysis and the concept of borderline personality disorder received its initial impetus for development leading to its inclusion in the current DSM and ICD glossaries. The analytic model was highly important in recognising the strong interactive influences of biological factors with the early human environment in the shaping of fears, defense mechanisms, and specific identifications, highlighting the need to consider the interaction of aetiological factors in the development of individual personality.

Experimental Psychology: Personality variation in normal populations has been largely studied by psychologists with the use of self-report inventories of increasing complexity and sophistication. This has resulted in several dimensional classifications of personality. From the large body of psychological work undertaken this century, three instruments have had a major influence on the description of personality: Eysenck's Personality Inventory (EPI), Cattell's 16 Personality Factor Questionnaire (16 PFQ), and Hathaway & McKinley's Minnesota Multiphasic Personality Inventory (MMPI). These are chosen from among many other instruments described in the psychological literature because they illustrate widely different approaches and have been extensively tested to measure psychometric properties. Eysenck's (1981) work has focused principally on three dimensions of personality types: N (neuroticism-stability), E (extraversion-introversion) and P (psychoticism-normality). His dimensional perspective has found support from several studies that have examined the relationship between personality type, physiological and genetic factors. Major concern has been the validity of the questionnaire taken at a single point in time and the uncertainty as to whether the lie score is an effective way of compensating for this.

Cattell's (1965) work is based on factor analyses, whereby 16 personality factors known as source traits were derived from an original list of over 4000 personality adjectives. He believed that the 16 "source" traits literally cause surface traits and are the key to

understanding and predicting behaviour. Others regard the "source" traits as no more than mathematical factors convenient to explain the variance in, but not causing, the surface traits. Cattell's 16 source factors can be further analyzed to produce 5 or 6 second order factors, some of which more closely resemble Eysenck's dimensions. Like Eysenck, Cattell's work had little impact on everyday psychiatric practice and diagnoses.

The MMPI (1951) was developed as a clinical tool to differentiate between abnormal personalities although subsequently, it has been used with normal populations. In total, 550 statements are presented with a true/false format to obtain scores on individual scales indicative of the presence of specific personality attributes such as paranoia, hypomania, etc. However, none of these dimensional models were derived from clinical populations. Instead they have been concerned either with i) the identification of different personality styles in the normal population which are then applied to clinical samples, or ii) dimensions of psychopathology that include a general, undifferentiated group of PDs (eg. the MMPI and EPQ). In recent years, several investigators in the field of personality have suggested that much of the variance in our current typology could be accounted for by five fundamental factors or dimensions ('the Big Five'), the names for these factors differ slightly from author to author (Zuckerman,1991; McCrae & John,1992; Tupes & Christal,1992). For example, McCrae & John (1992) refer to extraversion, agreeableness, conscientiousness, neuroticism, and openness. Attempts have been made recently to apply a dimensional approach to PD by developing self-report instruments that identify clinical PD diagnoses (Millon,1983; Hyler et al,1984; Kass et al,1985) but with limited success (Loranger,1992).

Additional data on dimensional systems is needed, based on clinical populations, in order to supplement the present categorical classification of PDs. For now, categorical diagnosis is the standard, and with all its problems, it remains the most useful method in everyday clinical psychiatric practice. The advantages and disadvantages of categorical vs dimensional approach in PD are reviewed in detail elsewhere (Frances,1982; Vize & Tyrer,1994) and will be discussed further at the end of this chapter. Nonetheless, in this thesis, I have adopted the categorical approach in full knowledge that there are other

approaches to classifying abnormal personalities.

To summarize, there is no single universally accepted theory or classification of personality. In the next section I turn my attention to the ill-defined boundaries between personality and personality disorders, and the use of the latter term in present day clinical settings.

### 1.1.2. Personality Disorders

The concept of personality disorder eludes precise definition and lacks clear boundaries. The demarcation between normal and abnormal personality styles are somewhat arbitrary, although generally the personality characteristics which separate abnormal people from the normal are considered to be disagreeable ones. Hence some element of social judgement invariably enters into the basic concept of personality. A personality disorder is not just disagreeable, it leads to a significant degree of functional impairment particularly in the realm of social relationships. Furthermore, individuals with deviant characteristics are assumed to be responsible for them and are expected to bear the consequences of their associated behaviour. Tyrer et al (1991), in their review article, credited the first clinical separation of personality disorder from mental illness to Pinel (1801). In his most celebrated case, a nobleman pushed a woman down a well in a fit of rage. He was clearly not ill, and possessed a clear, intact reasoning ability, showing no evidence of delusional beliefs. But in other respects his conduct and behaviour were thought characteristic of the mentally disturbed at that time. The nobleman in Pinel's account was diagnosed as a case of 'manie sans delire', but nonetheless sentenced to a life in custody. This central notion of irrational behaviour in the presence of otherwise normal reasoning processes has remained essential to the diagnosis of abnormal personality up to the present day.

The distinction between mental illness and abnormal personality was further refined in the 19th century by various individuals such as Pritchard, Benjamin Rush and Henry Maudsley. However, it was not until the 1920s that the categorisation of personality disorders received firm support. Based on clinical observations, Schneider's (1923)

categories together with similar work by Kahn, Kraepelin and Kretschmer, formed the groundwork for the present classifications.

Another important direction in the development of the concept of personality disorders is represented by Cleckley (1941). He argued that the maladjustment in psychopathic patients was so extreme that he believed them to be psychotic. The personality disorder was indeed a "mask of sanity", covering a more significant pathological process. More recent advances in genetic and organic research have partially supported this view, eg. schizotypal disorder is now classified under the schizophrenia subsection of ICD-10 in view of the similarities in phenomenology, family history and pattern of course with schizophrenic illness, but it is still distinguished as being milder and less often associated with deterioration, and there are no florid symptoms, ie. it is not schizophrenia.

In the last three decades, research into personality disorders has been dominated by American academics who, broadly speaking, represent one of two traditions: the psychodynamic tradition, with concern for the structure and development of personality and intrapsychic phenomena, or an empirical tradition, concerned with the accurate and reliable descriptions of behaviour that could be reflected in operational criteria. These two approaches have been incorporated together in various editions of the DSM which defines, amongst other mental disorders, a list of specific personality disorders.

### 1.1.3. DSM and ICD

The two most widely used classifications of personality disorders are the American Psychiatric Association's DSM and the World Health Organisation's ICD. They define personality disorders as follows:

American Psychiatric Association / DSM-IV (1994):

*" Personality traits are enduring patterns of perceiving, relating to, andthinking about the environment and oneself that are exhibited in a wide range of social and personal contexts. Only when personality traits are inflexible and maladaptive and cause significant functional impairment or subjective distress do they constitute personality disorders.....A personality disorder is an enduring pattern of inner experience and*

*behaviour that deviates markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time, and leads to distress or impairment."*

World Health Organisation / ICD-10 (1992):

*"Deeply ingrained and enduring behaviour patterns, manifesting themselves as inflexible responses to a broad range of personal and social situations. They represent either extreme or significant deviations from the way the average individual in a given culture perceives, thinks, feels, and particularly, relates to others. Such behaviour patterns tend to be stable and encompass multiple domains of behaviour and psychological functioning. They are frequently, but not always, associated with various degrees of subjective distress and impaired social functioning ..... Personality disorders are developmental conditions which appear in childhood or adolescence and continue into adulthood. They are not secondary to another mental disorder or brain disease, although they may precede and co-exist with other disorders".*

In both definitions, the essential features of personality disorder are: a) an enduring pattern of behaviour or inner experience; b) this enduring pattern is inflexible and pervasive across a wide range of personal and social situations; c) leads to significant distress or functional impairment; d) the pattern is stable and starts, in most cases, at adolescence or early adulthood; e) the pattern is not secondary to another mental disorder; f) is not directly due to the effects of use of substances, nor due to a general medical condition.

DSM-IV was designed for use in the United States and is primarily the product of American psychiatric consensus. ICD-10 is intended for use throughout the world and reflects the views and needs of the international psychiatric community. The two are different but have overlapping classification systems. Both are multiaxial systems involving a clinical assessment on several axes, each of which refers to a different domain of information such as various mental disorders, general medical conditions, psychosocial and environmental problems and level of functioning. Axis II in DSM-IV and F60 in ICD-10 is for reporting personality disorders, and may also be used for

noting prominent maladaptive personality features. The inclusion of personality disorders on a separate axis ensures that in the evaluation of patients these disorders are not overlooked when attention is directed to, the usually, more florid Axis I disorders. Both systems are based on a polythetic format, ie. containing a larger set of operational criteria for each personality disorder category and requiring the presence of only a specified number of them for diagnosis.

Tables 1.1.1 and 1.1.2 list the specific personality disorders included in both DSM-IV and ICD-10. There are slight differences in the DSM-IV/ ICD-10 nomenclature: Obsessive Compulsive/ Anankastic, Avoidant/ Anxious, and Antisocial/ Dissocial. In DSM-IV, Borderline, Narcissistic and Schizotypal are categorised as specific personality disorders, whereas in ICD-10, Borderline and Impulsive are viewed as subtypes of Emotionally Unstable, Narcissistic is excluded all together, and Schizotypal is located with Schizophrenia and Delusional Disorders and is no longer in the section for personality disorders. There are also some differences in the number of criteria required for various diagnosis. For example, each DSM-IV category consists of seven to ten criteria, and the presence of four to six is required for diagnosis; each ICD-10 category consists of six to ten criteria and the presence of at least four criteria is required for a diagnosis. Furthermore, there is some disagreement regarding cases identified as personality disorders in DSM and ICD, thereby reflecting the difference in behavioural specificity and emphasis. In the DSM system, PDs are axis II diagnoses; in the ICD-10, personality disorders are included on the same axis as the mental state disorders.

### 1.1.4. Brief Review of the Evolution of the DSM classification for Personality Disorders from First to Fourth edition of DSM

Blashfield & McElroy (1989) in their paper, trace the historical development of the DSM-III-R classification of personality disorders. They present the evolution of related concepts from one classification system to another. To summarise, the first edition of the DSM was published in 1952. Under this classification, the general section of personality disorders was subdivided into five headings: i) personality pattern disturbance (included inadequate, paranoid, cyclothymic & schizoid); ii) personality trait

*Table 1.1.1. List of DSM-IV personality disorders*

| | **DSM-IV Personality Disorders (Coded on Axis II)** |
|---|---|
| 301.0 | Paranoid Personality Disorder is a pattern of distrust and suspiciousness such that others' motives are interpreted as malevolent. |
| 301.20 | Schizoid Personality Disorder is a pattern of detachment from social relationships and a restricted range of emotional expression. |
| 301.22 | Schizotypal Personality Disorder is a pattern of acute discomfort in close relationships, cognitive or perceptual distortions and eccentricities of behaviour. |
| 301.7 | Antisocial Personality Disorder is a pattern of disregard for and violation of, the rights of others. |
| 301.83 | Borderline Personality Disorder is a pattern of instability in interpersonal relationships, self-image, and affects and marked impulsivity. |
| 301.5 | Histrionic Personality Disorder is a pattern of excessive emotionality and attention seeking. |
| 301.81 | Narcissistic Personality Disorder is a pattern of grandiosity, need for admiration and lack of empathy. |
| 301.82 | Avoidant Personality Disorder is a pattern of social inhibition, feelings of inadequacy and hypersensitivity to negative evaluation. |
| 301.6 | Dependent Personality Disorder is a pattern of submissive and clinging behaviour related to an excessive need to be taken care of. |
| 301.4 | Obsessive-Compulsive Personality Disorder is a pattern of preoccupation with orderliness, perfectionism and control. |
| 301.9 | Personality Disorder Not Otherwise Specified is a category provided for two situations: 1) the individual's personality pattern meets the general criteria for a personality disorder and traits of several different personality disorders are present, but the criteria for any specific personality disorder are not met; or 2) the individual's personality pattern meets the general criteria for a personality disorder, but the individual is considered to have a personality disorder that is not included in the classification (eg. passive-aggressive personality disorder). |

*Table 1.1.2. List of ICD-10 Personality disorders*

| | **ICD-10 Personality Disorders** |
|---|---|
| F60.0 | Paranoid Personality Disorders. Refers to an individual who is suspicious, distrustful, hypersensitive, envious, jealous and has an exaggerated sense of self importance. |
| F60.1 | Schizoid Personality Disorder. Refers to the individual who is introverted, shy, aloof, and withdrawn from affectionate and social contacts. |
| F60.2 | Dissocial Personality Disorder. Refers to the individual who is irresponsible, aggressive and often performs antisocial acts that are grounds for arrest. |
| F60.30 | Emotionally Unstable, Impulsive Type. Refers to the individual whose mood is unstable and who often acts impulsively regardless of the consequences. |
| F60.31 | Emotionally Unstable, Borderline Type. Same as F60.30. |
| F60.4 | Histrionic Personality Disorder. Refers to the individual who is vain, egocentric, coquettish, graceful, sexually provocative and prone to dramatic and attention-seeking behaviour. |
| F60.5 | Anankastic Personality Disorder. Refers to the individual who is overconscientious, rigid, pedantic, indecisive and a perfectionist. |
| F60.6 | Anxious Personality Disorder. Refers to the individual who has constant feelings of tension and apprehension, insecurity and inferiority, is hypersensitive to criticism and has a tendency to avoid certain activities because of exaggeration of the potential risks or dangers. |
| F60.7 | Dependent Personality Disorder. Refers to the individual with a pervasive reliance on other people to make any life decisions. Such an individual has great fear of abandonment, feels helpless and incompetent, often complies with the wishes of others and has a weak response to the demands of everyday life. |

disturbance (included emotional unstable, passive-aggressive - dependent, passive-aggressive - aggressive & compulsive); iii) sociopathic personality disturbance (included antisocial, dyssocial, sexual deviation and alcoholism); iv) special symptom reaction (eg. learning disturbances, etc.); and v) transient situational personality disorder (gross stress reaction, etc.). The personality pattern disturbances were relatively severe disorders in which the entire personality structure was affected. In contrast, the personality trait disturbances involved a single personality trait that had become inflexible and maladaptive for the individual. The sociopathic personality disturbances referred to individuals who had a range of deviant behaviour including antisocial behaviour, alcoholism and drug addiction. The special symptom reactions were restricted to single behaviour symptom such as learning disabilities, enuresis, etc. Finally, the transient situational personality disorders included what is now called post-traumatic stress disorder.

The second edition of DSM narrowed down the collection of disorders under the general heading of personality disorders to nine different subtypes, namely, Inadequate, Paranoid, Cyclothymic, Schizoid, Hysterical, Passive-aggressive, Obsessive compulsive, Asthenic & Explosive. The special symptom reaction, transient situational personality disorders plus alcoholism and substance abuse disorders were placed elsewhere in the classification. The distinction among personality trait, personality pattern and sociopathic personality disturbances was dropped.

The third edition of DSM, and its revision, returned to the use of subheadings. Under this classification, 11 personality disorders were organised into three clusters. Cluster A, containing Schizoid, Schizotypal and Paranoid, referred to disorders in which patients were likely to be seen as odd or strange. Cluster B, called the emotional cluster, contained antisocial, borderline, histrionic and narcissistic. Cluster C, called the anxious cluster, has avoidant, dependent, obsessive compulsive, and passive-aggressive. The major difference between DSM-III and DSM-III-R concern the diagnostic criteria used to define the personality disorders. Substantial differences exist in these systems for the definition of dependent, histrionic, paranoid and passive-aggressive. In addition, DSM-III-R included two controversial categories of self-defeating and sadistic in the appendix.

In the fourth and most recent edition of the DSM, three of DSM-III-R categories namely passive-aggressive, self-defeating and sadistic personality disorders have been deleted. Instead they are classified under Personality Disorder NOS in DSM-IV. No doubt the latest revision will generate further research and discussion.

### 1.1.5. ICD - Mental Disorders Section (Revisions 6 to 10)

The World Health Organisation (WHO) has played a vital role in developing health statistics for international use. ICD endeavors to catalogue a wide range of diseases including mental disorders, injuries and causes of death, with specific definitions and inclusion/ exclusion terms. A subsection on personality disorders can be traced back to the first edition of The Nomenclature of Disease published in 1869. Over decades, the term "psychopathic disorder" was used as a broad generic term to encompass a wide range of poorly delineated psychopathology exhibited by individuals with severe personality disorder who may display anti-social or other dysfunctional social behaviours. For example, in ICD-6 (1931) the subsection on personality disorders comprised of a single category - "psychopathic personality" which incorporated a range of psychopathology such as temperamental instability, pathological lying (psuedologia phantastica), pathological swindling, kleptomania, contentious (litigious) type and sexual perversions.

A similar theme was found in the seventh revision (1948) which divided psychopathic personality into five subtypes as follows: a) with pathological sexuality, eg. homosexuality, sexual perversion, sexual immaturity; b) with pathological emotionality, eg. schizoid personality, cyclothymic personality, paranoid personality, aggressive outburst, emotional instability; c) with antisocial trends, eg. moral deficiency, vagabondage, crime; d) with drug addiction; and e) mixed type. Significant changes were made to the eighth revision in 1969 by deleting the broad term psychopathic personality and replacing it with a list of ten personality types (paranoid, affective, schizoid, explosive, anankastic, hysterical, asthenic, antisocial, other, and unspecified). Minimal changes were made to this list in the ninth revision. In the early 1990s, however, attempts were made to converge the ICD and DSM classification systems

closer together in the recent tenth revision (ICD-10). Table 1.1.2 outlines the nine categories of personality disorders in ICD-10.

The placement of personality disorders on a separate axis and the development of operational diagnostic systems have been instrumental in stimulating personality disorder research. These criteria have the merit of clear definition and improved inter-rater reliability. The question of validity, however, has not often been addressed or adequately answered.

### 1.1.6. Limitations of Current Classifications

The boundaries between normal and abnormal personality style and between the different personality disorders are to an extent arbitrary. Some personality disorders may also lie along a spectrum of pathology (eg. the avoidant along an anxiety, borderline along an affective, and schizotypal along a schizophrenic, spectrum). This has lead some academics to favour a dimensional approach to define personality disorder pathology (Widiger & Frances,1985, Kass et al,1985, Cloninger,1987, Widiger et al,1987). However, it is not clear what optimal set of dimensions should replace the present categories. As yet there are insufficient data to justify replacing the familiar and established diagnostic categories with an unfamiliar and unestablished dimensional system.

Within a categoric system, questions remain regarding the use of a polythetic system. The precise choice of criteria was often based on clinical usage and only in some instances on empirical data. It would, therefore, be more productive to consider the present-day criteria as starting points for future research than as the last word in the diagnosis of personality disorders. Furthermore, the optimal cutoff points for establishing personality disorder diagnoses remain unclear. Setting the threshold higher or lower can dramatically influence the base rates of given disorders and the overlap among them (Widiger et al,1984). Moreover, polythetic criteria sets may allow for increased heterogeneity. For example, there are several ways to meet DSM-IV borderline personality disorder criteria and it is possible to meet the criteria without possessing

unstable-intense relationships, identity disturbance, or affective instability, even though most clinicians would agree that these are the core features of the disorder. In other words, some larger diagnostic groupings will contain a variety of people, with widely different personalities and widely different behaviours.

Many of the personality disorders inherently correlate with one another and necessarily share characteristics (Siever & Klar,1986, Pfohl et al,1986). For example, the schizoid, schizotypal and avoidant personality disorders share the feature of social withdrawal (none or only one close friend or confidant). Exclusion of this feature from one or two of them would improve their differentiation but the modified criteria set would misrepresent and distort their description. Shared criteria have inevitably increased the likelihood of multiple diagnoses in the same person. At present there is no accepted system of ordering personality disorders when several co-exist. Attempts were made by Tyrer and his colleagues (1988) to prioritise so that only a single diagnosis was made with their instrument, the Personality Assessment Schedule (PAS), based on the greatest impact on social functioning. Apart from this descriptive overlap, there is also a "co-occurrence" with Axis I disorders and the problems of distinguishing between the two axes conditions. Finally, even with the most elaborate diagnostic systems, many individuals remain difficult to diagnose. Many people simply do not fit clearly into one category or another. There will also be many individuals who will be on the threshold between a personality disorder category and neurosis or psychosis. Likewise, there will be individuals who seem to fit into a grouping but for whom the diagnosis cannot be made with certainty. Loranger (1990) screened 10,914 hospital admissions for personality disorder, of which 2,916 cases fulfilled criteria for DSM-III PDs with Mixed/Other/Atypical type as the most common diagnosis (32.6%), followed by borderline (26.7%), and dependent (9.1%).

Although the advent of operational diagnostic criteria originating from the North American DSM classification has promoted personality disorder research, there is a danger of only utilizing DSM criteria at the expense of testing alternative systems of diagnosing personality disorders. This practice could merely lead to further refinement of current DSM criteria without adequate concern for its validity (Tyrer et al,1991).

However, despite many criticisms, the concept of personality disorder remains a useful one for psychiatrists and one important area for future research is the comparison of the major diagnostic systems.

## ASSESSMENT OF PERSONALITY DISORDERS

By their very nature, personality disorders present many problems of measurement. For example, individuals with persistent patterns of behaviour disorder often do not recognize that their behaviour is maladaptive. Furthermore, an Axis I disorder such as major depressive disorder can be made solely with respect to symptom patterns according to an individual's own baseline subjective assessment of their condition, but personality disorders can only be diagnosed in an interpersonal context. Thus, thresholds for trait disturbances are more difficult to operationalize because the individual's own baseline can no longer be used to generate estimates of the degree of abnormality of the symptom pattern (Merikangas & Weissman, 1986). Nevertheless, since the publication of the criteria for DSM-III personality disorders, research in this area has grown markedly (Blashfield & McElroy,1987).

### 1.1.7. Diagnosis and Measurement of Personality Disorder prior to DSM-III

Personality disorder criteria available prior to 1980 were purely clinical descriptions, which allowed considerable subjectivity in diagnosing PDs. In general, two clinical procedures were used by the clinician to determine the extent and type of PD: i) the patient's account of disturbed and ineffective social interactions, revealing defect in the degree and type of his capacity to form relationships, and ii) direct observation of deviant behaviour patterns during examination of the patient's mental state, eg. over-dependent, aggressive, or isolated and reserved, etc. Eliciting sufficient information in these areas was clearly influenced by a clinician's training and experience. The strong influence of rater's bias on the diagnosis of PD was demonstrated in an elegant study reported by Walton and Presly (1973). In their study, each of the 140 patients were rated by three psychiatrists independently and without conferring, for severity and type of abnormal personality observed. Results indicated that the psychiatrists agreed about the

severity of the disorder in less than half of the patients they rated, and the diagnosis of the type of disorder was similarly unreliable. Furthermore, the clinicians tended to show distinct preferences for diagnosing particular subtype of PDs, and varied in the frequency with which certain labels were applied to men as compared with women. For example, clinicians over-used the diagnosis "hysterical" for women while practically reserving "passive sociopathy" for men. Likewise, Standage (1979) examined reliability of diagnosis, using Schneider's typology of PDs, and found great variability in the reliability of individual subtypes, and considerable overlap between them.

It became clear that clinical descriptions alone as outlined in ICD-8, ICD-9 and DSM-II were insufficient for a reliable assessment of PDs. Dramatic change in the diagnosis and measurement of PD took place during the late 1970s. Gunderson and Singer (1975) were first to propose a set of operational criteria for borderline PD which was incorporated into DSM-III, and subsequently, operational criteria were devised for other PDs such as antisocial, schizoid, obsessive-compulsive, etc. Thus, the present set of criteria and the instruments used to measure them are a fairly recent phenomena and need further revisions and modifications based on new empirical data. In the absence of any specific "objective" neurophysiological or biochemical correlate for abnormal personality, researchers and clinicians have increasingly relied on direct assessment of personality through questioning subjects.

### 1.1.8. Instruments for the Assessment of Personality Disorders

Several recent reviews have described in detail the development and characteristics of the instruments used to make PD diagnoses (Reich,1987, 1989; Standage,1989; Tyrer et al, 1991; Widiger & Frances,1987; Loranger,1991). The reader is referred to these reviews for a more detailed discussion. Broadly speaking, most instruments can be divided into two categories: semi-structured interviews and self-administered questionnaires. Tables 1.1.3 and 1.1.4 present a current list of those instruments covering **all** personality disorders included in DSM-III-R or ICD-10, but omit instruments that assess only one or a subgroup of personality disorder categories. It is important to point out that the instruments listed in the above two tables differ from each

*Table 1.1.3. Current Instruments available for the assessment of the full range of DSM-III/III-R or ICD-10 personality disorders.*

| **Instruments (Authors)** | **Diagnostic Criteria** | **Patient/ Informant** | **Kappa (inter-rater)** |
|---|---|---|---|
| Personality Disorder Examination, PDE (Loranger,1988) | DSM-III-R | Patient | 0.80 |
| International Personality Disorder Examination, IPDE (Loranger et al,1994) | DSM-III-R<br>ICD-10 | Patient | 0.73<br>0.77 |
| Standardised Assessment of Personality, SAP (Pilgrim et al,1993) | DSM-III-R<br>ICD-10 | Informant | 0.76 |
| Structured Interview for DSM-III-R Personality Disorders, SIDP-R (Stangl et al,1985) | DSM-III-R | Patient | 0.71 |
| Personality Assessment Schedule, PAS (Tyrer et al,1984) | 24 dimensions DSM-III-R & ICD-10 | Patient/ Informant | 0.70 |
| Structured Clinical Interview for DSM-III-R, SCID-II-R (Spitzer et al,1990) | DSM-III-R | Patient | 0.75# |
| Diagnostic Interview for Personality Disorder, DIPD (Zanarini et al,1987) | DSM-III-R | Patient | 0.89 |

#Reported by Renneberg et al,1992; no published reliability data from its developers.

*Table 1.1.4. List of self-administered questionnaires available for assessment of all personality disorders*

| Self-Report Instruments (Authors) | Diagnostic Criteria |
|---|---|
| Personality Diagnostic Questionnaire, PDQ-R (Hyler et al,1986) | DSM-III-R |
| Millon Clinical Multiaxial Inventory, MCMI-II (Millon, 1983,1984) | Approximates DSM-III-R |
| Tridimensional Personality Questionnaire, TPQ (Cloninger, 1987) | 3 dimensions |
| Personality Inventory Scales, PIS (Burgess, 1991) | DSM-III-R |
| Coolidge Axis II Inventory (Coolidge & Merwin, 1992) | DSM-III-R |
| Wisconsin Personality Inventory, WISPI (Klein, 1985) | DSM-III |
| Schedule for Normal and Abnormal Personality Disorders, SNAP (Clark, 1990) | DSM-III & Dimensional scores |

other in certain important ways. Firstly, while the majority use either the DSM-III-R or ICD-10 criteria, some use neither. The authors of the latter group, however, claim that DSM-III-R diagnoses can be generated from their data. Secondly, while most of these instruments yield primarily categorical diagnoses, some can yield dimensional scores. A third point of difference is that some of these instruments are based on patient interview alone whilst others are informant based.

As a general rule, standardised semi-structured interviews have been considered the method of choice in psychiatric diagnosis for research purposes (Zubin, 1989). During such interviews, clinicians can elicit information from subjects, clarify answers, and make judgements about the nature and the significance of certain symptoms. However, because the reliable and valid assessment of personality disorders requires experienced interviewers, a lengthy interview, and the evaluation of Axis I diagnoses for a comprehensive assessment of each subject, they have often been criticized as time-consuming and too expensive to employ in large-scale epidemiological studies. The convenience and low cost of using self-report questionnaires make this method a

superficially more appealing approach to data collection. Aside from low cost, self-report scales have the advantage of being free from systematic biases and tendencies of the interviewer. There are, however, certain major drawbacks in self-report questionnaires. Because ability and willingness to report psychopathology will vary from subject to subject, it may be risky to infer the presence of absence of certain symptoms solely on the basis of self-report items. In addition, a subject's present mental state may significantly affect the accuracy of their self-report (Hirschfeld et al,1983; Reich et al, 1986). Moreover, self-report questionnaires solicit subjective data, whereas observer rated interviews include observational data, allowing clinical judgment a role in interpreting the subject's responses. For some criteria (eg. lack of empathy in narcissistic PD) a subject may be a poor judge in self-report. Certain phenomena usually require an external judge for accuracy. There is also a danger that some assessments are unrealistically dependent on subject's self-report when the criterion reflects an objective phenomenon (eg. restricted emotionality, constricted affect). It is therefore not surprising that the discrepancy between these data sources can contribute to diagnostic disagreement in the same sample when assessed by self-report and interview method (Zimmerman & Coryell,1990; Hyler et al,1990). Finally, the yes/no format in questionnaires may have serious limitations. Most individuals may not view themselves in the same format as that required by the interview. Even when the interviewer requests an example, the yes/no format simply may not provide enough information to ascertain whether a positive answer represents a pervasive, long-standing pattern or a sporadic occurrence.

Comparisons of self-report questionnaires with standardised interviews for assessing PDs have shown poor concordance for categorical diagnoses (Zimmerman & Coryell,1990; Hyler et al,1990; Hogg et al,1990; Hunt & Andrews,1992). Self-report questionnaires tend to overdiagnose personality disorders in both patient and nonpatient samples (Hyler et al,1990,1992; Reich & Troughton, 1988). This is not necessarily a condemning feature because the instrument may be useful in screening for pathology rather than diagnosing it (Cantrell & Dana,1987; Loranger, 1992). Questionnaires could be used in a two-phase epidemiologic design in which only screened positive cases and a random sample of negative cases may be interviewed to be more cost effective, especially when the prevalence rates of some categories are low.

### 1.1.9. Reliability of PD diagnoses: Summary of Studies comparing Axis II Diagnostic Agreement

To avoid repetition, I shall not tabulate the results of the many reliability studies on PD diagnoses; these have already been examined in two exhaustive review articles by Zimmerman (1994) and Perry (1992). I shall however, summarise their work and discuss the potential sources of discordance within these studies.

The development of standardised assessment schedules has clearly improved diagnostic reliability compared with earlier unstandardised clinical evaluations. In general, inter-rater reliability for the presence or absence of any Axis II diagnosis based on semi-structured interviews is quite high (range 0.71 to 0.93), particularly in joint interviews and when the instruments are used by their developers (Loranger et al,1987; Zimmerman & Coryell, 1989; Stangl et al, 1985; Zananrini et al, 1987). Reliability may be lower when used by independent researchers (Standage & Ladha,1988; Marin et al, 1989), with exceptions (Loranger et al, 1994). In a large cross cultural study using the IPDE, undertaken jointly by the WHO and Alcohol Drug Abuse and Mental Health Administration (ADAMHA), good reliability was achieved by interviewers of diverse cultures and languages who were not involved in the development of the instrument. The overall weighted k values for a diagnosis of personality disorder that was definite or probable were 0.65 for DSM-III-R and 0.72 for ICD-10. These results compare favourably with published reports on semi-structured interviews used to diagnose Axis I disorders (Williams et al,1992). On the whole, the average k coefficient of inter-rater agreement across the 15 reliability studies reviewed in Zimmerman's paper (1994) was above 0.60 for all PDs. But the reliability of specific subtypes of personality disorders is less impressive.

An alternative examination of reliability is the test-retest approach in which two raters separately interview the patient. As this procedure incorporates more sources of error (rater variance in criteria interpretation, rater variance in the elicitation of information, and patient variance across interviews), it inevitably results in lower mean k coefficients than joint-interview reliabilities (Stangl et al, 1985; Zanarini et al, 1987). In particular, when the interval between the interviews is greater than a couple of weeks, or coincides

with an improvement in psychiatric state, the test-retest reliability coefficients are generally lower than joint-interview values (O'Boyle & Self,1990; Ames-Frankel et al,1992). The decrease in reliability from a joint interview to a short-interval test-retest to a long-interval test-retest design may vary by PD. Antisocial and paranoid PD are reported to have stable reliability across study design (Robins et al,1977; Prusoff et al,1988). In contrast, the reliability of all the remaining disorders, except compulsive PD, drops from the joint interview to the short-interval test-retest to the long-interval test-retest studies (Zimmerman,1994). Furthermore, sample selection may influence the reliability. Studies using severely character disordered samples, or patients with pervasive personality pathology presenting for long-term psychotherapy, may achieve higher reliability than studies of patients who are consecutively presenting to a general hospital unit, tertiary care centre, or to an outpatient clinic because the former group are more likely to be prototypic cases (Vandiver & Sher,1991; Robins et al,1982).

Not only should a PD instrument demonstrate adequate inter-rater reliability but it should also have temporal stability because "personality" refers to a person's long-term functioning. Good temporal stability (mean k 0.57) was reported for personality dimensional scores on self-report inventories in normal adults across eight longitudinal studies of personality reviewed by Costa & McCrae (1986). A similar level of stability has also been reported for some standardized interview schedules for PDs such as Tyrer et al's PAS (k=0.64) and Loranger et al's IPDE (k=0.62 for DSM-III-R and k=0.59 for ICD-10) for the presence or absence of any specific PD. But on the whole, the temporal stability of standardised interviews of PDs fare no worse than those used for lifetime diagnoses of axis I disorders such as the psychoses, mood, anxiety and substance use disorders (Andreasen et al,1981; Bromet et al,1986; Rice et al,1986).

Demonstrating high reliability of a diagnostic method is not enough to answer questions about validity. Validity, both of the diagnostic criteria and of the methods of obtaining these criteria, remains to be established for personality disorders and the validity of PD measures remains a controversial topic. Spitzer (1983) and Skodol et al (1988) have suggested that diagnostic measures be validated against expert clinical diagnoses (ie. a LEAD standard). This strategy, however, is not suitable for personality disorders where

reliability of clinically based PD diagnoses is poor (Mellsop et al,1982). Obviously if clinicians cannot reliably diagnose PD, their diagnoses cannot serve as a standard of comparison. There is still a need for more studies that address validity by comparing the diagnoses made by any two or more methods against some external criterion of validity, such as aetiological factors, prediction of course, and treatment response (Perry,1990). While some studies have begun this work (Pilkonis et al,1991; Oldham et al,1992), more evidence is required before we can say that the Axis II diagnoses made by any one method are valid. Of course, validity is a general problem in psychiatry for Axis I disorders as well.

To summarise, although the introduction of structured interviews and self-report questionnaires to assess personality disorders has resulted in improved diagnostic reliability within each method, there is still sufficient diagnostic disagreement when comparisons are made between any two instruments. Hopefully, as we gain more experience in assessing PDs, further modification of criteria may follow, better instruments will be developed and routine training programs may lead to a reduction in measurement errors.

### 1.1.10. Other Factors Influencing the Assessment of Personality Disorders

The reliability and validity of instruments to assess PDs are influenced by a number of other factors. Issues such as trait-state artifact, use of informants, interviewer training, content in different instruments, categorical vs dimensional perspective, and diagnostic stability will be examined in the following section to highlight the complexities of what is still a developing field.

**Trait-State artifact:** There is psychometric evidence to suggest that personality evaluation may be influenced by a subject's dysphoric mental state and this may in turn distort or misrepresent traits (Ingham,1966; Kerr,1970; Bianchi & Fergusson,1977; Reich et al,1986). This effect can be present despite clear instructions to the patient at the start of the exercise that he or she should describe what they are like when they are their usual, normal self. Studies using self-report questionnaires consistently show that

subjects over-report pathology when they are acutely ill (Alnaeus & Torgersen,1989; Zimmerman et al,1991). This is commonly referred to as the "trait-state" problem in personality assessment. Similar findings have also been reported when studies used personality tests that were designed not only to measure traits but also to assess DSM-III personality disorders (Mavissakalian & Hamann,1987; Joffe & Regan,1988). In these studies significantly more patients had a PD diagnosis prior to treatment than after treatment.

In general, the trait-state artifact seems to be more pronounced when personality inventories are used, rather than clinical interviews. In a recent report by Loranger et al (1991), no evidence emerged that a patient's morbid mental state had affected the diagnosis of PD when a semi-structured clinical interview, Personality Disorder Examination (PDE), was used to examine the trait-state phenomenon on 84 psychiatric patients. Even with the more sensitive dimensional approach, based on the number of criteria met by the patients, there was still no indication that anxiety or depression had a major affect on personality assessment. These improved results need to be replicated in other samples and by other research teams before the trait-state issue can be dismissed as a potential source of significant error when personality is assessed by clinical interview rather than by a self-administered personality inventory.

**Use of Informants:** The evaluation of PDs should ideally be based on multiple sources of information. Nevertheless, there is some disagreement over who should be questioned when assessing PDs - the patient or a close informant. Tyrer & Ferguson (1987) have argued that although personality differences may be rated correctly by the patient, the level of impaired social functioning is probably best determined by those close to patient. They acknowledge however that the quality of information obtained from a relative or friend is significantly influenced by the informant's own personality, hence limiting the value of the whole process. In patients with significant PD pathology, poor agreement has usually been reported between patients and informants' responses, both through interviews (Tyrer et al,1979) and questionnaires (Dowson,1992a,b; Zimmerman et al,1988). Some operational guidelines have been developed to resolve this contradictory information (Tyrer,1990). However, some studies have found no difference in the

reliability of PD assessment when based on two sources of information vs the patient interview alone. As yet there is insufficient data to recommend one source of information over the other. It is likely that for some characteristics (eg. affective) patients must be interviewed, whereas for others (eg. interpersonal, behavioural), informants may be more appropriate.

**Interviewer training:** A major limitation of semi-structured interviews is their reliance on the interviewer's skills and experience. Rater variance due to different levels of experience, training, etc. may contribute to some disagreement, especially when clinical judgment is involved in the final ratings (Williams et al,1992). Instruments vary greatly in the recommended clinical experience required, ranging from acceptability for a trained lay person to the requirement of a qualified psychiatrist or psychologist. It is conceivable that the reliability of PD diagnoses is influenced by the interviewer's own personality, age, sex, race, and length of experience. An interaction between these and the patient's characteristics may affect rapport, and thus, data collection. This limitation of the interview method could have accounted for some failures to replicate original research. Apparently, even extensive training may not guarantee consistency in interview administration and scoring (Black et al,1993; Coryell & Zimmerman,1989). The high reliabilities of some semi-structured interviews suggest that this may not be a major source of disagreement, but there are no studies comparing raters with different levels of training or from different sites.

**Content in different Instruments:** Instruments do not necessarily cover the same content, in that different questions are used to assess the same criteria. Questions in various instruments may be sufficiently different that it cannot be assumed that individuals who are rated positive on one measure will be positive on others. This problem may be further amplified for self-report questionnaires because an individual patient's interpretation of a question can be somewhat idiosyncratic.

**Categorical vs Dimensional Perspective:** Another theoretical issue related to the measurement of PDs is the ongoing debate over whether to adopt the categorical or dimensional approach. Following the clinical tradition, as with axis I disorders, the

personality disorders are presented as categories in the major glossaries with defined cut-off points, even though there is more empirical support for the dimensional approach. It is clear that the boundaries between normal and abnormal personality styles, and between the different personality disorders, are to a large extent arbitrary (Frances & Widiger,1986; Frances,1982; Williams & Spitzer,1983). Proponents of the "dimensional" approach (Frances,1982; Cloninger,1987; Widiger,1992) question the applicability of the categorical method to personality disorders. They propose that personality disorders are not truly dichotomous in nature since better reliability can be obtained using a dimensional system because their measurement would incorporate more information than that provided by categories alone (Clark,1990). However, some of the arguments against a pure dimensional model still remain valid. Not only may a dimensional approach be cumbersome and inefficient in clinical practice (Widiger et al,1988), but some of the disorders will be highly correlated, providing redundant information. Moreover, the present classificatory systems would be likely to grow further after including certain fundamental dimensions of personality that are not currently represented.

### 1.1.11. Diagnostic stability

PD diagnosis is more likely to remain stable in those individuals who consistently score well above the diagnostic threshold rather than in near threshold non-cases. In other words, diagnostic stability may be influenced by sample selection. Studies based on hospital samples may select those individuals with relatively extensive or severe psychopathology or those close to prototypic examples of PDs, thereby improving diagnostic stability. Furthermore, recent follow-up studies of borderline PD suggest that diagnostic stability is related to the length of follow-up interval.

### 1.1.12. Conclusions

Significant strides have been made in the past decade in the assessment of PDs. Of the methods available to assess personality disorders, standardised interview schedules have been the method of choice in the measurement of PDs. They have been shown to have

excellent inter-rater reliability (average kappa value $>0.75$) and good temporal stability. But work on issues related to the validity of PDs remains in its infancy.

# CHAPTER 1.2. OUTCOME AND PROGNOSTIC FACTORS IN PERSONALITY DISORDERS

In medicine, disorders are ultimately validated by the demonstration of specific aetiologies. In psychiatry, however, few diagnoses have been validated by the demonstration of specific aetiological processes and the problem is by no means uniquely that of personality disorders. Robins and Guze (1970) described six phases in the validation of a clinical syndrome: i) identification and description of the syndrome, either by 'clinical intuition' or by cluster analysis, ii) demonstration of boundaries or 'points of rarity' between related syndromes by discriminant function analysis, latent class analysis, etc., iii) follow-up studies establishing a distinctive course or outcome, iv) therapeutic trials establishing a distinctive treatment response, v) family studies establishing that the syndrome 'breeds true', and vi) association with some more fundamental abnormality: histological, psychological, biochemical or molecular. Unfortunately, few of these have so far been established for personality disorders. Because personality disorders are defined as enduring and persistent, a knowledge of its longitudinal course is crucial in validating the concept. In this thesis, follow-up methodology will be used to examine whether the long-term outcome for patients with specific PD diagnosis is distinctive from other PD groups. More specifically, longitudinal data will be obtained retrospectively to a) validate axis II categories as defined in DSM-III-R, b) provide information on whether patients with specific PD diagnosis show a characteristic course, and distinctive outcome, over time, and c) identify prognostic factors that may contribute to poor recovery over the years. Before reviewing studies on the longitudinal perspective of PDs, I will consider briefly the follow-up methodology.

## 1.2.1. Follow-up Methodology

Follow-up studies provide valuable information on whether a group of subjects with a specific diagnosis will show a characteristic course over time, and whether the diagnosis itself has long-term stability. Broadly speaking, follow-up studies are of two types: prospective and retrospective. The former comprises of repeated observations of the

same person at regular intervals over time, whereas the latter involves collection of longitudinal data at one time only, as with this study. Retrospective follow-up design, however, is fraught with problems, particularly those of diagnostic validity due to poor memory of subjects, reliance on medical record data, and of, comorbidity. Despite these limitations, follow-up studies are essential for accurate information on the longitudinal course of specific PDs. Furthermore, one cannot evaluate the efficacy of treatment of PDs without knowing the natural history, since gains made in treatment may dissipate with time. For these reasons, the follow-up study remains an important investigative method.

Based on a review of follow-up studies on schizophrenia, McGlashan (1984) outlined six requirements of follow-up methodology for comparability across studies: i) diagnosis using operationally defined criteria, ii) prognostic or predictor and demographic characterisation of the sample, iii) outcome measured from multiple dimensions and perspectives, iv) independence of data collection, v) reliability testing of the ratings, and vi) bias testing of the non-participating subjects and those unavailable for follow-up. All of the points listed herein have been applied to the present investigation, with the exception of (iv) due to limited resources.

### 1.2.2. Longitudinal Studies on Personality Disorders

As yet, there are no long-term prospective studies in personality disorders that have employed more than a 10-year timescale, with the exception of antisocial personality disorder (Robins,1966). Almost all long-term outcome studies have been retrospective. Moreover, virtually all long-term outcome investigations have been limited to the borderline, schizotypal or antisocial PD. This partly relates to the ease with which these disorders can be reliably rated, and also because of greater ease in conducting follow-up studies of in-patients on whom adequate clinical documentation is available. Broadly speaking, the literature on the prevalence and outcome of personality disorders suggests that some categories improve significantly over time and others show little change. Tyrer & Seivewright (1988) identified two groups of personality disorders with regard to age: immature personality disorders that improve over time, and mature personality disorders

that tend to persist into middle or old age. The former group include anankastic, paranoid, schizoid (and schizotypal) and anxious PDs; the latter include the antisocial (dyssocial), borderline (impulsive), histrionic, dependent and narcissistic PDs. In this chapter, I shall summarise the recent findings on the long-term course of patients with operationally defined PDs. First, I shall consider the outcome literature on those personality disorders which have already been subject to detailed follow-up, namely borderline, antisocial and schizotypal PDs, followed by the current state of knowledge on the long-term course of the remaining PD categories included in DSM-III-R. PDs in old age will then be considered, followed by the importance of comorbidity in the evaluation of outcome. Finally, I shall present recent findings on mortality in PD group.

### 1.2.2.1 Outcome of Borderline Personality Disorder (BPD)

Follow-up studies of borderline patients can be broadly divided into two groups: first, there are the early studies conducted before established diagnostic criteria were adopted for BPD. Second, the studies carried out in the 1980s utilizing more reliable diagnostic criteria for BPD (Tables 1.2.1 & 1.2.2). These studies include eight short-term follow-up (3 to 7 years) and five long-term follow-up (10 to 25 years). In the earlier studies, which are reviewed elsewhere (Dahl,1986; Stone,1989), BPD was not diagnosed using modern criteria and no control groups were included. These earlier studies included groups diagnosed at the time as pseudoneurotic schizophrenia (Hoch et al,1962), borderline syndrome (Werble,1970), emotionally unstable character disorders (Rifkin et al,1972a,b) and borderline patients (Carpenter & Gunderson,1977). As it is virtually impossible to estimate what percentage of patients from each of these studies would have met DSM-III criteria for BPD, I will not review them here. In general, their results suggested an unfavourable life course which was similar to that of patients with schizophrenia, except for the better socialisation noted among the borderline patients. Of course, it must be born in mind that schizophrenia was also poorly defined in the USA prior to Feighner et al (1972) and was probably milder than the more stringent present day concept. Likewise, short-term follow-up studies employing DSM-III or Gunderson's Diagnostic Interview for Borderline (DIB) criteria, conveyed the impression that borderline patients show minimal improvement over the short term. However, little

*Table 1.2.1. Short-term follow-up studies of DSM-III and/or DIB defined borderline personality disorder patients*

| AUTHOR'S NAME | N | Trace-rate | CRITERIA | FU (years) |
|---|---|---|---|---|
| Skodol et al, 1983 | 30 | | | 3 |
| Pope et al, 1983 | 27 | 81.8% | DSM-III/DIB | 4-7 |
| Barasch et al, 1985 | 76 | | DSM-III | 3 |
| Perry et al, 1985ab | 24 | | | 1-3 |
| Akiskal et al, 1985 | 100 | | DSM-III/DIB | 6mo-3yr |
| Modestin & Villiger, 1989 | 18 | 69% | DSM-III | 4.5 |
| Mehlum et al, 1991 | 29 | 82/97 | DSM-III-R | 3 |
| Links et al, 1990 | 65 | 73.8% | DIB | 2 |

*Table 1.2.2. Long-term follow-up studies of DSM-III and/or DIB defined borderline personality disorder patients.*

| AUTHOR'S NAME | N | Trace-rate | Criteria | FU (years) |
|---|---|---|---|---|
| Plakun et al, 1987 | 63 | 27% | DSM-III | 14 |
| McGlashan, 1986 | 81 | 81/94 | DSM-III/DIB | 15 |
| Paris et al, 1987 | 100 | 31.5% | DIB | 15 |
| Kroll & Ogata, 1987 | 13 | 87% | DIB | 20 |
| Stone, 1993 | 206 | 95% | DSM-III/DIB | 16.5 |

data on the psychosocial outcome of borderline patients were obtained in these studies and few predictive variables could be established.

The long-term studies have provided more important information about outcome and predictive variables. In terms of outcome, functioning appears to improve with time and increasing age. Some of the more rigorous follow-up studies (McGlashan,1986; Stone et al,1987; Paris et al,1987) indicate that the course of the disorder is characterised by an early period, less than 5 years post-discharge, of great difficulty, followed by sustained improvement in perhaps 25% to 50% of cases. There have been five long-term follow-up studies of BPD utilizing criteria based instruments (Table 1.2.2). All studies were based on retrospective follow-up design, relying on medical records data for baseline measures, and followed up patients more than 10 years after the initial assessment. I will confine my review to three of these studies (McGlashan,1986; Stone,1987; Paris et al,1987) on account of their more rigorous methodology. The remaining two will be mentioned only briefly: Plakun et al (1987) carried out a follow-up over 13.5 years, but were only able to obtain outcome data on 20% of the initial cohort. Kroll & Ogata (1987) carried out a 20 year follow-up, but only 15 patients met Gunderson's criteria (1978) for borderline PD.

McGlashan's (1986) Chestnut Lodge Follow-up Study

As part of a large comprehensive follow-up investigation of severely-ill in-patients treated at Chestnut Lodge in Rockville, USA, McGlashan (1986) examined the long-term outcome in 81 DSM-III BPD patients an average of 15 years after their discharge. Of these, 87% were alive, their average age at follow-up was 47 years. Despite the atypical nature of his sample which comprised wealthy patients who had all had private psychoanalysis, his findings were comparable to other long-term outcome studies based on general hospital population which included a more representative range of socioeconomic classes (Paris et al, 1987). Outcome was measured multi-dimensionally via interview with the patients and/or significant others (the majority by telephone). In general, the natural history of the borderline patients was as follows: Onset was usually in late adolescence with illness escalation through the 20s. Onset was seldom precipitated by specific stress but appeared more likely to be a response to altered developmental

demands. First treatment contact was more likely to be in the form of outpatient psychosocial treatment as opposed to inpatient and somatic treatments. When hospitalised, their in-patient time was the shortest of the diagnostic groups (compared to schizophrenia, schizophreniform psychosis, bipolar affective disorder and unipolar affective disorder) and they were among the least likely to require transfer to another institution. They were less passive and compliant as evidenced by the high rate at which they discharged themselves against medical advice.

At follow-up, the BPD patients were doing well in their basic living situations. Most lived independently, many with close partners, and about half had become parents by the time of follow-up. BPD patients generally had good work records and the majority (68%) managed to work full-time in reasonably complex jobs. Borderline patients were found to be moderately socially active. There were, however, two subgroups - one was functioning well and had managed to create and maintain meaningful relationships with stability over time. The other group studiously avoided meaningful relationships. Overall, these patients' characteristic labile relationships appeared to resolve with time in one or the other polarity, ie. either stably social or regularly distant. Most BPD patients demonstrated persisting psychopathology. Depressive signs and symptoms were very common. They were also likely to "handle" depression with a melange of symptoms, including typical borderline acting out. The average borderline patient experienced psychiatric symptoms of moderate severity for about 50% of the follow-up period. The diagnosis of BPD proved relatively stable over time; the patients were more likely to resume abusing drugs and/or alcohol after discharge rather than present psychotic or neurotic/somatic symptomatology. Antisocial activities, incidentally, were essentially absent in McGlashan's borderline sample. Almost one half (46%) of the sample were receiving some form of psychiatric treatment at follow-up. The hospitalisations required by some borderline patients during follow-up period were commonly brief and crisis-oriented. Although medication was not used extensively (22%) after discharge, psychosocial outpatient treatment was very common, with nearly half the patients requesting or requiring further therapeutic support. Finally, BPD patients seemed to improve with age, particularly in the realms of symptomatic and instrumental functioning. Many middle-aged borderline patients held stable jobs but not close social

and personal relationships. The latter deficit appeared not to change with time.

Stone's (1987,1990) PI-500 Study

Stone and his co-workers (1987,1990) followed-up the largest sample (N=206) of BPD patients, referred to as the PI-500 (for New York State Psychiatric Institute), with the highest trace-rate of 95% - a remarkable achievement. All but a dozen of the patients were known to the author personally. The patients were predominantly (78%) middle or upper-middle class, largely Jewish (52%) or Protestant (22%), with an average IQ of 118. Almost all (91%) were single, their average age when admitted to hospital was 22 years. At follow-up (average 16.5 years), the marriage rate was half the national average for persons from their respective cultures and only a small percentage of borderline women had children during the follow-up period; this approximated to a quarter of the general population average. Compared with schizophrenic group, the borderline patients were more likely to have worked during half or more of the follow-up period (18% vs 66%), and to have worked at higher levels of complexity. DSM-III BPD diagnosis persisted in only a quarter of the sample as the group entered middle age (40s through 50s). The majority were diagnosed at follow-up as manifesting one of the milder PDs (eg. histrionic, avoidant, obsessive-compulsive). Re-admissions during the follow-up period were only a third as likely for borderline patients as for schizophrenic patients (28% vs 77%). On the whole, two-thirds of the patients were clinically well at follow-up. The remaining one-third who did not do well belonged to two broad categories: suicides and the chronically impaired. When traced after an average of 16.5 years, the suicide rate was 8.5%. But 15 of the 19 borderline patients who committed suicide did so within 5 years of leaving the hospital. A combination of borderline PD + major affective disorder + alcohol abuse constituted one of the most fatal combinations and was associated with high risk of suicide or fatal acts of carelessness, and was matched only by the suicide rate (40%) among those patients who exhibited all 8 of the DSM-III criteria for BPD. These findings are consistent with those of Paris et al (1988) and Zilber et al (1989); the latter reported that the standard mortality rate (SMR) was three times higher in those who had a PD and who also abused alcohol or drugs compared to those who did not abuse substances (21% vs 7%). In McGlashan's (1987) series, only the BPD patients with concomitant unipolar depression showed suicide rates in this

range. In the larger remaining sample, the rate was 3%. This low suicide rate is partly accounted for by the older average age (26 yrs) of the patients in McGlashan's series, who had already passed through the main age at risk (20-29 yrs) in the USA for suicide (Solomon & Murphy, 1984).

Paris et al's (1987) Follow-up of Borderline Patients

Paris and colleagues (1987) followed up 100 borderline patients (DIB defined) from a general hospital population which included all socioeconomic classes. Approximately half his sample had failed to complete high school. The mean length of follow-up was 15 years and the mean age at time of follow-up was 41 years. Their results confirmed that active borderline psycho- pathology changes with age. Loss of impulsivity and affective symptoms were accompanied by a change in relationships, suggesting a less chaotic style of relating to other people. Their work history, social relationships, and family adjustment were less than ideal, but not notably different from an average outpatient clinic population. Since Paris's sample represented a wider population of borderline patients (from all socioeconomic levels), the similar findings of McGlashan and Stone may also be generalizable to wider population of borderlines.

Prognostic Factors

Because BPD patients, at 10-25 years follow-up, have a wide range of outcomes, from clinical recovery (50%-60%) to suicide (3% to 9%), attempts have been made to identify the factors that may contribute to good recovery. The three strongest predictors of positive global outcome identified in McGlashan's study (1986) were: high IQ, absence of affective instability, and shorter length of previous hospitalisation. In addition, several other variables emerged as predictive when all six outcome dimensions were considered. Better outcomes were associated with: (a) less family history of substance (alcohol) abuse; (b) better premorbid heterosexual functioning; (c) lower levels of stress at onset of illness; (d) absence of a schizotypal trait (magical thinking); (e) presence of feel affect (dysphoria, elation, absence of inadequate affect) without evidence of affective dysregulation (mania, depression, affective instability); (f) control of aggression in object relations (absence of devaluation, manipulation, and hostility in relationships); (g) borderline diagnosis by Gunderson & Kolb (1978) criteria; and (h) minimal evidence of

chronicity (shorter index hospitalisation and discharge from index hospitalization rather than transfer to another institution). It is noteworthy that predictors related to premorbid functioning were absent in McGlashan's study.

In the PI-500 series (Stone,1993), poor outcome was noted in BPD patients with (a) a history of parental brutality, (b) a history of father-daughter incest, (c) concomitant schizotypal features, or (d) concomitant antisocial features. In contrast, BPD patients whose outcomes were distinctly better than the average tended to show one or more of the following attributes: (a) high intelligence, (b) unusual talent in music, art, writing, etc., (c) physical attractiveness, (d) concomitant obsessive compulsive traits, and (e) in the case of alcoholics, adherence to AA. It has been claimed that certain predictor variables can also be identified in short-term follow-up. For example, Links et al (1990) identified two variables that could significantly predict the presence of BPD at 2-year follow-up: impulsiveness and young age when first psychiatric care was received.

Although considerable overlap exists between BPD and major affective disorder (MAD) in all the studies, there is however, disagreement about whether co-occurring MAD indicates a better or worse prognosis for borderline patients. Three (Plakun et al,1985; McGlashan, 1986; Paris et al,1987) of the five recent long-term follow-up studies indicate that the co-occurrence of MAD is correlated with a more negative outcome than samples with BPD or MAD alone. In contrast, Pope et al (1983) found that the presence of concomitant DSM-III MAD in BPD patients predicted a better outcome in several areas of functioning and better responsiveness to medication when compared with the "pure" BPD group. Similarly, Stone (1990) noted that, in males with BPD, affective illness was associated with a generally better outcome. But in the remainder of his male subjects, there was an over-representation of antisocial traits. These discrepancies may be, in part, a reflection of sample peculiarities.

It is still not clear whether treatment influences outcome. There remains a need to systematically investigate whether those borderline patients who received a variety of treatments with little consistency do as well as those receiving inpatient treatment plus long-term psychotherapy. If so, then the improvement of borderlines over time could be

as much maturational as due to specific forms of treatment.

To summarise, borderline patients, at 10-25 years follow-up have a wide range of outcomes, from clinical recovery (50%-60%) to suicide (3%-8.5%). In general, borderline pathology appears to change with age. In their middle age, borderline patients seem to lose their active symptoms, and many are medication-free, employed full-time, married and raising families. Certain factors are associated with good outcome, eg. high IQ, absence of affective instability and shorter length of previous hospitalisation, and others (eg. parental abuse) with poor outcome.

### 1.2.2.2. Outcome of Antisocial Personality Disorder (ASPD)

Much of the information on the natural history of ASPD comes from two classic studies pioneered by Robins (1966, 1991). In her earlier work, Robins (1966) examined long-term outcome in children from a child guidance clinic who were in their early 40s at follow-up. Overall, approximately one-third of children who had met the childhood criteria for conduct disorder had also met the adult criteria for ASPD, a finding confirmed independently by other investigators (Rutter & Giller,1983; Zoccolillo et al,1992). Results suggest that the likelihood of meeting adult diagnostic criteria increased as the number of childhood conduct problems increased, from 18% with the minimum of 3 conduct problems to 46%, when there were at least 6 conduct problems. No individual childhood behaviour problem was found to be a particularly good predictor of ASPD, although 29% of all runaways before age 15 met criteria for ASPD, followed by delinquency (25%) and vandalism (21%). But the importance of these symptoms resided mainly in their clustering together into at least 3 or more childhood behaviour problems. Results of recent prospective follow-up of hyperactive children reaching early adulthood (up to age 23 yrs) confirm the link between childhood behaviour problems and adult ASPD (Klein & Mannuzza, 1991; Hechtman et al, 1981). All the same, Robins' study (1966) noted that this supposedly "interminable" disorder could remit in the fourth decade of life but 60% were judged to have shown little improvement. In the past decade, the Epidemiological Catchment Area Project (ECA) carried out in the USA has extended this finding into later age ranges and showed that the frequency of ASPD

decreased with age. However, the ECA study was cross-sectional rather than longitudinal in design, and therefore fell short of establishing empirically that as individuals with ASPD approach middle years, more and more of them go into remission.

Antisocial personality typically begins about age 8-9 years with a variety of behaviour problems at home and in school. By age 11, 80% of all future cases have had a first symptom. ASPD is fully expressed by late 20s or early 30s. Its most characteristic features are job problems, marital difficulties and violence. A proportion have difficulties with the law, and approximately half of all prison inmates meet criteria for ASPD. As persons with antisocial personality age, more and more of them go into remission in the fourth decade of their life. Aging is accompanied by a decrease in the spectrum of antisocial behaviours, including crime. Despite spontaneous remission at middle age, ASPD is a disorder with a protracted duration. Among those with no symptoms in the past year, the average duration from first to last symptom was 19 years (Robins et al,1991).

To understand why some individuals with ASPD get better with age, one needs to closely examine the criteria used to define ASPD. There is much criticism that the DSM-III-R category of ASPD heavily relied on criteria involving criminal behaviour. Therefore, an understanding of the longitudinal course of ASPD could be gained from research into criminal behaviour. Walters (1990) reviewed the literature on persistent offenders and outlined the following longitudinal perspective on career criminals who persist through four successive stages: (a) precriminal (10-18 yrs), (b) early criminal (18 - mid/late 20s), (c) advanced (late 20s to early 40s), and (d) criminal burnout/maturity stage (early 40s onwards). Factors relating to desistence from crime include the stress of continuing a criminal lifestyle, shifts in aspirations and goals, development of a satisfying relationship, commitment to legitimate employment, and becoming less self-absorbed, rebellious and pleasure seeking. However, a small proportion of individuals will continue to engage in criminal behaviour through their mid-life.

Turning to risk factors associated with ASPD, male rates of ASPD greatly exceed female rates. This was the case for every age and ethnic group (white, black & hispanic)

included in the ECA study. However, the sex ratio is lower among the young than among the elderly, suggesting that there may be a convergence over time. It seems that childhood behaviour problems predict antisocial personality better in boys, eg. running away from home predicted ASPD for 41% of males compared to only 15% of females. In general, childhood behaviour problems were about equally predictive for blacks and whites. A slightly lower than average IQ score has been repeatedly found to be associated with conduct problems in childhood (Rutter & Madge, 1976) and presumably, therefore, with later ASPD. However, there is no simple linear association with amount of completed education. As expected, the lifetime rates of ASPD are lowest in college graduates (1.2%), but the highest rate occurs not among those with the least education (less than 8 yrs, a rate of 2.9%), but among those who entered high school but did not complete it (4.9%). The ECA study confirmed the finding that urban areas have higher rates than rural areas, eg. for white men, the lifetime rate of antisocial personality was 5.6% in urban St. Louis site and 3.7% in the surrounding rural area. Finally, based on estimates derived from the ECA data, Robins et al (1991) propose that ASPD appears to have been on the increase in recent cohorts in the USA. By the time the youngest cohort in the ECA study reaches 30-44 years of age, if the same proportion of those with 3 or more childhood symptoms meet adult criteria as among the current 30-44 year olds, their lifetime prevalence rate will be 6.4% compared with the rate of 3.7% in the cohort now 30-44 years old.

Looking at the life-styles associated with ASPD, marital history including multiple separations and/or divorces, or co-habitations serve as a criterion symptom for ASPD. Chronic unemployment is higher among the antisocial group. The ECA study indicates that persons with ASPD rarely seek medical treatment of its symptoms. Of all those ever qualifying for the diagnosis, only 4% had a psychiatric consultation, a rate no different from that of persons with no current diagnosis at all. But if they had a concurrent disorder, the treatment rate rose to 21%, suggesting that it may be the concurrent disorder rather than the antisocial personality that led to treatment. In all age, sex, and ethnic groups, ASPD alone did not add to the likelihood of receiving treatment. The only forms of institutionalization elevated for the ASPD group were imprisonment and inpatient treatment for alcohol and/or drug problem. In terms of comorbidity, less than

10% of cases had no additional diagnoses, a finding similar to clinical samples, including patients in emergency clinics and outpatients departments (Robins et al, 1977). ASPD was the least likely to occur in isolation: it did so in only 11% of the emergency clinic sample and 16% of outpatients' sample. It is well known that ASPD is associated with drug and alcohol abuse (Robins et al, 1977); men with ASPD are 5 times as likely to abuse drugs and 3 times as likely to abuse alcohol as those without ASPD. These rates are even higher for women: 13 times for drugs and 13 times for alcohol. In fact, persons with ASPD have elevated rates of all other diagnoses, except for cognitive impairment (Robins et al, 1991). Earlier follow-up work on broadly-defined "psychopaths" indicated that, at 5-6 years follow-up, although psychopaths may leave the prison they may enter the hospital circuit, and that improvement in conviction figures conceals a good deal of unhappiness and maladjustment (Maddock, 1970).

Not surprisingly, earlier short-term follow-up studies of "psychopathy" yielded pessimistic findings (Mayer-Gross, 1960; Rapoport, 1967; Maddocks, 1970). Depending on the criteria employed to evaluate outcome, findings varied somewhat. If the conviction rate was used, the outlook was much better. If other psychosocial measures were used such as work history, sexual relationships, psychopathology, etc., then the outlook was disappointing for the majority of cases. About half of the sample drifted into alcohol/substance abuse or chronic hypochondriasis, accompanied by a paranoid attitude. Mortality rate from suicide was around 5% (Maddock,1970).

In contrast, more recent longitudinal work on ASPD, based on DSM criteria, predict gradual improvement with age (notably during the ages 40s through 50s). Unfortunately, antisocial personality appears not to respond well to the current treatment methods available. Furthermore, the presence of ASPD concomitant with other axis I disorders such as substance abuse (Kosten et al,1982; Lewis,1984), alcohol dependence (Lewis et al,1985), eating disorders (Rossiter et al,1993) may contribute to unfavourable outcome.

### 1.2.2.3. Outcome of Schizoid/Schizotypal Personality Disorders

Outcome studies of STPD have been few and suffer from small sample sizes, but the

long-term outcome of STPD on global measures seems to be closer to schizophrenia than major affective disorder (McGlashan,1986c; Plakun et al,1985).

In the first long-term follow-up study of patients with DSM-III schizotypal personality disorder (STPD), McGlashan (1986) compared outcome in a group of patients with the pure syndrome (N=10) to patients with mixed STPD/BPD (N=18), with schizophrenia (N=53), and BPD (N=81). Results indicated that STPD was frequent among inpatient samples but rare as a pure syndrome. STPD was found to frequently overlap with BPD. In follow-up terms, STPD appeared related to schizophrenia but not to BPD. Characteristically, STPD patients had good intellectual endowment, reasonable work skills and had achieved quite satisfactorily in the educational realm. Socially, however, they were more withdrawn and secluded which was different from, and worse than, the premorbid social functioning of the schizophrenic patients. In terms of psychopathology, however, STPD patients were closer to the personality disordered contingent than they were to schizophrenia even though the STPD patients appeared resistant to both drug and alcohol abuse. The mixed STPD/BPD group had a long-term profile closer to BPD than to STPD. Finally, contrary to expectations, the presence of STPD in schizophrenic patients appeared to enhance outcome in the latter group.

Stone (1983,1993) followed-up briefly a sample of 25 schizotypal borderline outpatients with global ratings. On average, these patients showed little change. Least improvements was seen in those patients manifesting more schizophrenia-like symptoms, namely, social avoidance, oddity, suspiciousness, referentiality and anhedonia. Co-occurrence of paranoid features correlated with worst outcomes. The best outcomes were seen in those with some capacity for empathy and emotional warmth.

Studies that focus on the links between the syndrome in childhood and adult life have already proved their value in the understanding of ASPD. A similar approach has been applied by Wolff & Chick (1980) in the study of "schizoid" personality. They followed-up 22 boys diagnosed "schizoid" , some ten years later, into adulthood (mean age at FU was 22 yrs) and found that three quarters fulfilled DSM-III criteria for STPD and two developed schizophrenia. Overall, their psychosocial adjustment was worse, but not

markedly, than that of other attenders at a child psychiatry clinic. As a group, they remained solitary, deficient in their interpersonal relationships, lacking in empathy, oversensitive, with odd styles of communicating, and often with circumscribed interests. On the whole, the probands maintained their personality characteristics into early adult life. While their work adjustment was, at times outstanding, and on the whole satisfactory, their deficient intimate human relationships continued for many to be a source of stress to themselves and their families. In a recent report, Wolff & McGuire (1995) confirmed similar long-term outcome among 17 girls who were given a diagnosis of "schizoid" personality in childhood and seen approximately 17 years later at a mean age of 27 yrs. A striking finding, possible due to referral bias, was the high rate of antisocial conduct in the "schizoid" girls, both in childhood and later life.

To summarise, in general, the long-term functioning of patients with schizotypal and/or schizoid PD appears to show little improvement in terms of social and interpersonal relationships, although their educational and work performance is satisfactory. They remain solitary, awkward and lacking in emotional warmth.

### 1.2.2.4. Outcome of Other Personality Disorders

The literature is sparse on long-term course and outcome in personality disorders other than those already outlined. Cluster C disorders (obsessive-compulsive, avoidant, dependent & passive-aggressive) seldom lead to regular inpatient treatment and have therefore been neglected by investigators in long-term follow-up work. The few anecdotal reports about the long-term fate of passive-aggressive patients, treated with psychoanalysis, seldom focus on personality disorder per se, but rather on transference responses, and do not present outcome data with precision (Sashin et al,1975; Weber et al,1985).

There are two short-term (2-5 years) follow-up studies that look beyond BPD and STPD, using DSM-III criteria (Modestin & Villiger, 1989; Mehlum et al,1991). Mehlum et al (1991) examined 2-5 years outcome in Cluster C PDs (avoidant, dependent, passive-aggressive, obsessive-compulsive), and other PDs groups along with the BPD and STPD

groups. The initial sample comprised of 97 patients treated in a day hospital therapeutic community in Norway, of whom 82 patients eventually participated in the follow-up investigation. At follow-up, an average of 3 years after index admission, patients with Cluster C PDs, showed both marked symptoms reduction and good global functioning. Using a smaller sample, Modestin & Villiger (1989) compared 17 DSM-III Other Personality Disorder, OPD (non-borderline) patients to 18 BPD patients, 4.5 years after their index discharge. Results failed to show a difference in the degree of overall psychopathology or in the level of psychosocial functioning and adjustment at follow-up between the two diagnostic groups, although mainly BPD patients committed suicide and experienced more re-hospitalisations of a shorter duration during the follow-up period. However, these findings may be misleading and must be regarded with caution. First, the sample size is small and very heterogeneous with regard to PD sub-categories. Second, only a third of the sample could be investigated at follow-up. Moreover, the OPD follow-up patients were less handicapped than the OPD drop-outs and, therefore, unrepresentative of the original OPD population. Third, the follow-up period may not have been long enough to capture the differential outcome in various PD groups. Nonetheless, the authors rightly draw attention to the fact that future outcome studies should focus on other PDs.

In an attempt to examine the validity of narcissistic personality disorder (NPD) diagnosis, Plakun (1989) retrospectively compared 17 NPD patients with 33 BPD patients, 19 patients with schizophrenia and 26 with MAD in terms of longitudinal course and outcome. Results supported NPD as a valid diagnostic entity, more distinct from schizophrenia than MAD. Unlike BPD, equal sex distribution was noted in NPD. At follow-up, NPD patients had poor social functioning, particularly in the low level of satisfaction with heterosexual relationships, and probably poorer overall follow-up functioning compared with the BPD group. Others (Stone,1989; McGlashan & Heinssen,1989) have evaluated the influence of narcissistic features on the long-term functioning of individuals with BPD, and reported that despite differences in baseline psychopathology, persons with narcissistic features had similar outcome to those in the borderline group as a whole. An exception was a subgroup of narcissistic borderlines who also showed marked antisocial traits: poor outcome was the rule in this subgroup

(Stone,1989). In general, borderlines with NPD tended to be males and to be more at risk for suicide than non-NPD borderlines.

### 1.2.3. Personality Disorders in Old Age

Personality disorder diagnoses are often under-recorded in older patients, leading to the general impression that individuals aged 65 years or older rarely meet DSM-III/ DSM-III-R criteria for PDs. Because of lack of cross-sectional studies in the older age group, and the lack of longitudinal studies of personality disorders, researchers have not been able to adequately explain this finding. Several explanations have been offered (Fogel & Westlake, 1990; Fishbain,1991) as follows: (a) DSM and ICD classification have an age bias, (b) cognitive changes of old age, such as dementia or depression, may influence the diagnosis of PD, ie. state-trait phenomena, and are more likely to be under-recorded in older patients, (c) personality naturally changes with normal aging, thereby influencing the diagnosis of PDs, (d) the 'mature' PDs (schizotypal, schizoid, paranoid & obsessive-compulsive) remain stable with aging, whereas the 'immature' PDs (borderline, antisocial, histrionic, narcissistic & passive-aggressive) become less evident with aging, (e) the relationship between risk-taking behaviour and PDs could lead to excessive early mortality, thereby decreasing in prevalence in the older age group. More systematic studies on older population are needed to clarify these issues.

Based upon clinical impression and few detailed case studies, certain features emerge with some consistency among a subgroup of aging personality disordered individuals (Sadavoy, 1987,1992). It appears that the expression of pathology shifts from action-oriented, dramatic behaviour to an interpersonal and somatic focus. Hypochondriacal symptoms, and narcissistic features become more pronounced in old age. Also, as stated above, dysphoria, dysthymia and depression are common. Generally, however, personality disordered patients are more refractory to antidepressant medication, but appear to gain from interpersonal therapy. If the patient has the misfortune of suffering from dementing illness, it may have additional effect on symptom expression in the form of anxiety states, and/or paranoid ideation. To conclude, in a subgroup, the symptoms of personality pathology persist into old age but they change in focus away from the

more impulsive, action-orientated behaviour to somatic presentation with interpersonal difficulties.

### 1.2.4. Comorbidity of Personality Disorders

It is striking that the outcome studies reviewed in this chapter give scant attention to comorbid disorders. Empirical studies, using systematic assessment techniques, have consistently demonstrated a substantial overlap and/or co-occurrence among PDs (Pfohl et al,1986; Loranger et al,1987; Widiger et al,1991; Oldham et al,1992), and with a broad range of axis I disorders (Oldham et al,1995). In particular, the comorbidity of BPD with axis I (especially mood disorders, substance use disorders, eating disorders) and axis II disorders (histrionic, antisocial, narcissistic, paranoid & passive-aggressive) is well documented. For the purpose of this review on outcome studies, it is reasonable to assume that the presence of various comorbid conditions may, in part, influence the presentation, course, response to treatment, and eventually, the long-term outcome in these patients. There are indeed several studies that indicate the presence of PD as being a negative prognostic factor in several axis I disorders (Zimmerman et al,1988; Nurnberg et al,1989; Tyrer & Seivewright,1988) and some PDs (Woolcott, 1985; Gabbard & Coyne, 1987; Stone, 1990, 1993). This holds true across the range of personality disorders but the relative importance compared with other predictors of outcome is not fully known. No long-term outcome study has been published in which attention was paid to a full range of PDs and/or psychiatric disorders which may co-occur with the PD category under scrutiny. More research is required in this area and with attention paid to the presence of confounding variables (comorbid personality disorders and mental state disorders) together with, and a systematic examination of their influence on outcome.

### 1.2.5. Mortality and Suicide

Mortality and suicide are important aspects of long-term outcome studies, particularly in individuals with personality disorders. Mortality rates in PD subjects are higher than those for the general population. Among psychiatric populations, mortality rates are

similar for schizophrenia and personality disorders. In a survey of all patients (N=16,147) admitted in 1978 to psychiatric hospitals in Israel, Zilber et al (1989) reported a five year standardised mortality ratio (SMR) for various diagnostic groups in different age groups. SMR for the personality disorder group in the 20-39 years age group was 6.89, which was similar to that found for schizophrenia (SMR = 6.33) but lower than that for affective disorders (SMR = 8.53). Approximately half the deaths for PD were due to natural causes, mainly infections (SMR = 3.15). Unfortunately, the authors do not report mortality figures by specific PD categories, although other smaller studies have reported these figures for the borderline patients (Pope et al,1983; McGlashan, 1986; Fyer et al,1988; Stone, 1992), and the antisocial group (Robins,1966). It has been estimated that almost 10% of borderline patients who attempt suicide eventually succeed. Comorbidity with affective disorder, and substance abuse is known to increase the lethality and frequency of suicide attempts, and eventually, risk of mortality (Fyer et al,1988).

To conclude, follow-up studies outlined in this chapter, even though centred on the more severe disorders, suggest that beneficial changes can often occur as a person enters the 4th or 5th decade of their life. Long-term outcome is variable in all PD groups, reflecting the heterogeneous nature of the groups. Broadly speaking, some disorders (namely cluster B disorders) seem to show greater change over time than others (particularly cluster A disorders).

# CHAPTER 2. AIMS OF THE STUDY

It is apparent from the literature review that previous longitudinal studies of PDs have been restricted to borderline, schizotypal and antisocial PDs (Dowson, 1995). These studies are mainly retrospective, involving inpatient or prison samples which represent a relatively severe spectrum of individuals who usually have several co-occurring disorders. There are no long-term prospective studies of PDs, other than work on childhood conduct disorder which has been shown to be linked to adult antisocial PD (Robins, 1978). Moreover, as yet, no longitudinal study of PDs has been reported on a UK sample, other than those reporting adult outcome in children with behavioural difficulties in childhood (Wolkind & Renton,1979; Wolff & Chick,1980; Zoccolillo et al,1992). There is a clear need to replicate the longitudinal studies of PDs reported in the USA and Canada, on a UK patient population, as well as to widen the scope of the study of personality disorders beyond borderline, antisocial and schizotypal PDs. DSM-IV describes 10 different PDs, and there may be considerable difference in the clinical course of these PDs, but so far knowledge is limited.

The primary aim of this investigation was to provide information about the long-term outcome of patients diagnosed as personality disorders in a British hospital setting. The subjects were followed-up retrospectively, over a mean period of 13 years (range 2 - 22 years), in order to evaluate their progress in several areas of functioning, including morbidity and social functioning. An attempt is made to apply recent diagnostic classification (DSM-III-R) on a cohort of former PD patients, and to relate diagnoses with subsequent psycho-social functioning at follow-up. The study differs from previous outcome studies in selecting a consecutive series of patients who were twins. This gave an opportunity also to study their co-twins who served as a comparison group, in part of the investigation. The advantage of using co-twins for the control group was their close match for age, family background, early rearing experiences, and genotype, which could influence the formation of PDs.

The evaluation of the course of PDs is complex, and most longitudinal studies of PD have relied on multiple, albeit crude, measures to chart the fluctuating course. Likewise,

in the present investigation, outcome was evaluated on multiple criteria. Data on a wide range of variables related to the course of PDs was gathered from several sources, including personal interview with subjects at follow-up. Results are presented under four broad headings (or chapters) as follows: diagnostic change at follow-up, mortality, psychosocial functioning, and factors predicting outcome. These constitute the four primary aims of the present investigation. First, to provide a description of the psychopathology in two PD cohorts (broadly- & narrowly-defined), and their co-twins, at follow-up, using DSM-III-R nomenclature. Here, the main focus was on the varying degrees of stability of PD categories, over time. In addition, I comment on the degree of agreement, or lack of it, between PD diagnoses obtained from two separate sources namely, hospital case-records at index and patients' interviews at follow-up. Second, to examine the incidence of early death among PD patients and their co-twins during follow-up, and to identify common causes of premature death in the study sample. Third, to provide a description of psycho-social functioning in PD patients, and their co-twins, during the entire follow-up period. Psycho-social functioning entailed a wide range of variables including global functioning, overall severity ratings of PD, further treatment since index discharge, lifetime axis I disorders, employment, social and family relationships, change in marital status, and domicile at follow-up.

The specific objectives of the study were:

(1) To establish what proportion of probands continue to have a PD diagnosis at follow-up?

(2) Whether the length of follow-up influence diagnostic change, if any?

(3) Whether diagnostic stability vary for different DSM-III-R PD categories over time?

(4) To examine the agreement between DSM-III-R PD diagnoses based on hospital case-records at index and diagnoses obtained by interview at follow-up.

(5) To compare the incidence and pattern of mortality in patients with PDs, and their co-twins, at follow-up. Of particular interest was: (a) whether patients with PD diagnosis had an increased risk of early death compared to their co-twins? and (b) whether the excess mortality

among the PD group, if any, was explained by death due to natural or unnatural causes, compared to their co-twins?

(6) To examine the relationship between suicide and DSM-III-R PD diagnosis at index.

(7) To examine the relationship between suicide and lifetime axis I disorders (RDC defined).

(8) To identify demographic and clinical risk factors associated with suicide among the PD group.

(9) To provide a detailed descriptive account of psycho-social outcome in two PD cohorts (broadly- & narrowly-defined), as well as in the co-twin group, on multiple criteria such as global functioning, overall severity ratings of PD, further treatment since index discharge, employment, social and family relationships, change in marital status, and domicile at follow-up.

(10) To provide psychosocial outcome for patients with specific DSM-III-R PDs and to identify outcome measures that would distinguish certain PDs from the rest.

(11) To identify variables (demographic/ premorbid characteristics, traumatic antecedents, and indicators of psychopathology) predictive of "good" vs "poor" global outcome in personality disorder patients at 2-22 years follow-up.

# CHAPTER 3. STUDY SAMPLE

The sample investigated in the present study is somewhat unique compared to most other work carried out in the field of personality disorders. The work is based on a twin sample ascertained from the Maudsley Twin Register. First, I will describe the Maudsley Twin Register, ie. the sampling frame from which the present twin sample was derived. Next, I will focus on the selection of the study sample, and finally, describe the demographic characteristics of both the proband and the co-twin groups. The co-twins serve as a comparison group in the study.

## 3.1 The Sampling Frame: Maudsley Twin Register

The Maudsley Twin Register was set up in 1948 for the purpose of systematic collection of all patients, of twin birth, who registered with any adult clinical services at the Maudsley and Bethlem Royal Hospitals (commonly referred to as the 'Joint Hospital'). At registration, each patient is routinely screened by paramedical staff for a range of demographic details, including whether the person was of multiple birth. These data are coded onto a datasheet (locally referred to as the 'frontsheet') which is incorporated in the hospital casenotes, after the data are entered into a database. In addition, the 'frontsheet' information on all patients of twin birth is stored separately in the Maudsley Twin Register. This serves as a valuable resource for psychiatric genetic research. Gottesman & Shields' (1972) famous twin study on schizophrenia was based on a twin series ascertained from the Maudsley twin register, and several other studies (Reveley et al,1984; Gurling et al,1984; Chitkara et al,1988) based on different diagnostic groups have contributed to our understanding of psychiatric disorders. Between 1948 and 1966, only those probands who had a living same-sex cotwin were included in the twin register. Since 1967, efforts have been made to extend the twin register to include all twin probands, both of same-sex (MZ and DZ) and opposite-sex (DZ), as well as those whose cotwin was no longer alive. In the mid-1980s, all the information on the twin register were transferred onto a computerised database and each twin folder was painstakingly updated with copies of further clinical information regarding their assessment, treatment and discharge summaries. Until today, data on newly registered

twin probands are routinely forwarded to the Genetics Section, in the Department of Psychological Medicine of the Institute of Psychiatry, where fortunately, the maintenance of the Maudsley twin register continues. A complimentary twin register also exists in the Children's Department, where all probands under age 16 years are registered and subsequently entered into the children's twin register.

## 3.2. Sample Selection

The study sample comprises a consecutive series of 197 patients seen at the Joint Hospital between 1967 and 1989 with a hospital diagnosis of personality disorder, **and** reported to be of twin birth. Unlike previous twin studies on personality disorder, a small subgroup of probands whose co-twin had died before the age of 15, are also included in the present sample. Patients from all facilities whether inpatient or outpatient department, day hospital or emergency clinic are included in the study. Those patients were selected who met the following inclusion criteria:

a) primary or secondary hospital diagnosis of ICD-9 personality disorder (301.0 - 301.9);
b) aged between 17 and 65 years;
c) absence of organic brain syndrome, functional psychoses, or current alcohol or drug dependence which was being treated simultaneously.

144 subjects had a primary and 53 cases a secondary diagnosis of personality disorder. The latter group of patients presented with symptoms of depressive illness or neurotic disorders but were included as it was felt that the distinction made by the clinician regarding a secondary PD diagnosis as opposed to a primary diagnosis, was somewhat arbitrary. Patients were included in the present study only if their diagnosis at discharge was unequivocal.

The comparison group comprised of the 153 co-twins of the proband sample who had survived beyond the age of 15. A cutoff of age 15 was employed in order to make the sample compatible with other twin studies on functional psychoses being conducted in

the unit (Reveley et al,1984; Lewis et al,1987; Chitkara et al,1988; Lewis et al,1989).

## 3.3. Sample Characteristics

Proband Group (N=197): Table 3.1 presents the demographic characteristics of the probands and their co-twins. In the proband group, male:female ratio was approximately equal. In terms of formal education, just under 10% of the sample had higher education leading to an under-graduate degree, and a further 19.3% of probands completed trade/business school after passing school exams. But over half the sample left school without taking formal exams. Looking at the distribution of the probands by social class at index contact, over two-thirds belonged to social classes 3, 4 or 5. A further 18.8% of the probands were reported to be unemployed at index. Only 15.2% of the patients belonged to social classes 1 or 2. Despite a high emigrant population in the local borough where the Maudsley Hospital is situated, the present sample was predominantly white (95.9%), the remaining 4% were either black (2%) or of mixed race (2%). There was a notable absence of Asian cases. This phenomenon may be partly explained by the fact that only one-third of the patients lived locally, the rest were referred from outside the local catchment area. Over half the probands (57.4%) had remained single when first seen at the Maudsley Hospital at a mean age of 29.6 years.

Broadly speaking, most probands had first sought help for psychiatric problems in their early 20s (mean age of 23.3 yrs), then went on to utilise outpatient facilities on average 2 years later, and were subsequently seen at the Maudsley Hospital in their late 20s, when they received a formal diagnosis of personality disorder. A slightly greater proportion of patients were treated on outpatients' basis than as inpatients (56% vs 44%). Regarding their source of referral, only a small proportion (12.7%) of probands were self-referrals, with almost half the sample being referred by their GP, a further 20% by other hospitals for a second opinion, and the remaining 20% by other agencies such as courts, social services, probation services, etc. Next, focusing on the duration of contact with the Maudsley Hospital, 41% of the probands were seen for over 6 months; however, one-third of the sample had only brief contact of less than a month, of whom a proportion (18% of all probands) were only seen once.

*Table 3.1. Sample characteristics of the probands and their co-twins*

| Demographic Variables | | Probands N=197 (%) | Co-twins N=153(%) |
|---|---|---|---|
| Gender | Male | 100 (50.8) | 75 (49.0) |
| | Female | 97 (49.2) | 78 (51.0) |
| Marital Status at Index Contact | | | |
| | Single | 113 (57.4) | |
| | Ever married | 84 (42.6) | |
| Race | White | 189 (95.9) | |
| | Black | 4 (2.0) | |
| | Asian | - - | |
| | Mixed | 4 (2.0) | |
| Education | Graduate | 18 (9.1) | |
| | 1-3 yr trade school | 38 (19.3) | |
| | High school complete | 37 (18.8) | |
| | 10-11 yrs of school | 87 (44.2) | |
| | 7-9 yrs of school | 15 (7.6) | |
| Social Class | 1 & 2 | 30 (15.2) | |
| | 3,4 & 5 | 126 (64.0) | |
| | Unemployed | 37 (18.8) | |
| Zygosity | MZ | 36 (18.3) | 30 (19.6) |
| | DZ,SS | 68 (34.5) | 64 (41.8) |
| | DZ,OS | 49 (24.9) | 49 (32.0) |
| | Cotwin dead | 34 (17.3) | |
| | Not known | 10 (5.1) | 10 (6.5) |
| Camberwell Area (Yes) | | 58 (29.4) | |
| Source of Referral | Self | 25 (12.7) | |
| | GP | 93 (47.2) | |
| | Hospital | 40 (20.3) | |
| | Other | 39 (19.8) | |
| Status at Maudsley | Inpatient | 86 (43.7) | |
| | Day patient | 1 (0.5) | |
| | Outpatient | 110 (55.8) | |
| Duration of Contact | >1 year | 63 (32.0) | |
| | 6mths - 1 yr | 18 (9.1) | |
| | 1-6 mths | 54 (27.4) | |
| | < 1 mth | 26 (13.2) | |
| | Once | 36 (18.3) | |
| Mean age at index contact | | 29.7yr $\pm$ 10.4 | |
| Mean age at first psychiatric contact | | 23.3yr $\pm$ 10.1 | 27.3 $\pm$ 11.3 |
| Mean age at first hospital admission | | 25.3yr $\pm$ 10.4 | 27.1 $\pm$ 13.2 |

Co-twin Group (N=153): Like the proband group, there were roughly equal number of men:women (75:78) in the co-twin group. Their numbers differ from the proband group because the five sets of double probands (ie. where both members of a pair received treatment at the Joint Hospitals independent of each other - 3 MZ pairs and 2 DZ pairs) are not included in the co-twin group in this instance, and the co-twins of a further 34 probands had died at infancy/ childhood. Of the 153 co-twins, 29 (18.9%) cases were known to have sought psychiatric help during their lifetime. This could be an underestimate of the total number of affected co-twins because adequate clinical follow-up information was not available on roughly one-third of these cases. Their mean age at first psychiatric contact and at first psychiatric hospitalisation, where applicable, was 27.3 yrs and 27.1 yrs respectively, which is somewhat later than the mean ages reported for the proband group as a whole.

Sample distribution by zygosity: Twin zygosity was established by two methods: blood test and response to physical resemblance questionnaire including items shown to be highly predictive of zygosity (Torgersen, 1979). Blood tests were performed on a quarter of 104 same-sex twin pairs by serological matching of 6-8 blood antigens. 197 probands were divided as follows: 36 (18.3%) monozygotic (MZ) twins, 68 (34.5%) dizygotic same-sex (DZ,SS) twins, 49 (24.9%) dizygotic opposite-sex (DZ,OS) twins, and 34 probands whose co-twin died (CD) prior to age 15. Zygosity was uncertain in 10 cases owing to insufficient information.

## 3.4. Two Study Cohorts: Clinical PD Diagnosis and DSM-III-R PD

Depending on the diagnostic classification adopted, probands comprised two cohorts: broadly-defined and narrowly defined cohort. All 197 probands with a clinical diagnoses of personality disorder at index discharge were included in the broadly-defined cohort. Of these, 142 cases also satisfied criteria for DSM-III-R PD diagnoses at index, based on ratings of hospital case-records, and comprised the narrowly-defined cohort. As little is known about the long-term outcome of clinically defined PD group, it was of interest to provide outcome findings on both cohorts separately. Therefore, results are presented for both cohorts in the following chapters.

# CHAPTER 4. METHOD

This is a retrospective follow-up study, an average of 13 years later, of a cohort of twin probands with a hospital diagnosis of personality disorders. The study addresses several issues related to nosology, aetiology and the long-term course and outcome of personality disorders. The investigation examined the full range of personality disorders in DSM-III-R using systematic assessment techniques. It is important to state here that although the study involves a twin sample, it is not a classic twin study of personality disorders addressing genetic issues. Instead, for part of the present investigation, I have used twins for a cotwin-control study to investigate the association of diagnosis with long-term outcome in personality disorders; thus, all alive co-twins, who were traced and contacted, served as the comparison group.

The study was carried out in three stages: baseline assessment, tracing/recontacting, and follow-up assessments. First, for baseline assessment, hospital casenotes of all probands were re-rated for personality disorders, at index admission, blind to the follow-up data, according to DSM-III-R criteria. In addition, each patient was rated on demographic, family, premorbid and morbid characteristics including previous history of axis I disorders. Second, systematic efforts were made to trace and re-contact the probands, and their cotwins. Finally, a detailed follow-up assessment was carried out 2-22 years later, blind to index status, by personal interview wherever possible. Lifetime clinical assessments were made of both axis I and II disorders with standardised clinical interview schedules, SADS-L (Spitzer & Endicott,1978) and IPDE (Loranger et al, 1988). Outcome was assessed multi-dimensionally over the entire follow-up period with the brief version of McGlashan's Standard Follow-up Interview (1984). These methods are similar to those used in the long-term follow-up studies of schizophrenia (Sartorius,1979; McGlashan,1988) and are applied here for the first time to the study of personality disorders.

## 4.1. Baseline Assessment

Hospital casenotes at index contact, and from other previous hospitals, where applicable,

were systematically examined for each patient and rated for a list of diagnostic and predictor variables. The latter were selected from studies of outcome prediction in borderline PD patients and can be divided into three components: (1) demographic/ premorbid variables (eg., gender, education, marital status, social class at index, whether treated as inpatient or outpatient at index, duration of index admission, age at index, age at first psychiatric contact, age at first hospitalisation, and adolescent friendship patterns); (2) antecedent variables (eg., birth complications, delayed developmental milestones, childhood neurotic traits, family history of psychiatric illness, family history of psychoses, reared by other than parents in childhood, parental loss before leaving school, parental separation before leaving school, history of physical abuse, history of sexual abuse, any criminal record, and head injury); (3) indicators of psychopathology (all DSM-III-R PDs and any 'lifetime' RDC psychiatric disorder until the end of the follow-up period, or death, where applicable). Because hospital diagnoses do not reflect a consistent and specifiable set of criteria across the years, study patients were re-diagnosed according to DSM-III-R criteria set. No hierarchy was imposed while assigning PD diagnoses, thereby, patients were given multiple diagnoses if they fulfilled sufficient criteria for any PD defined in DSM-III-R. Two independent raters, applied operationalised criteria to the casenote information and completed a checklist comprising a list of PDs criteria. The diagnostic interrater reliabilities were found to be adequate, ranging from 0.42 to 0.99 for individual PD categories.

## 4.2. Tracing & Re-contacting Probands

Locating and interviewing a heterogeneous group of 197 probands with a previous hospital diagnosis of personality disorder, after an average of 13 years since their discharge from the Maudsley Hospital, was a very difficult task. Many of the problems lay in the cohort's mobility, change of surnames during follow-up period particularly among female probands, and when located, their reluctance to talk about the past which many wished to put behind them.

To begin with, names, date of birth and hospital numbers of all probands were first checked against the database of the Maudsley Hospital in order to identify those

currently in contact with the Joint Hospital services. Eleven (5.6%) patients fell in this category. The responsible consultant clinicians' for these patients were contacted with a request for their permission to approach the patient for a follow-up assessment and a brief synopsis of the patient's present circumstances. Follow-up assessment was undertaken on all those cases where consent was obtained.

Next, as most probands had been out of contact with the Joint Hospital for several years, they had to be traced through the Office of Population and Census Survey. Names and dates of birth of all probands were submitted to the National Health Service Central Register (NHSCR) who supplied the details of the local health authorities where the probands' were registered with a GP or where they last resided. Also, as part of the search, NHSCR notified me of any probands who had died during the follow-up period. In such cases, copies of their death certificates were obtained giving date and cause of death, and demographic details regarding age, occupation, marital status, address, and next of kin of the deceased.

In reply to my standard letter, the local health authorities' forwarded the name and address of the patient's present GP. As a policy, patients' current address was never released directly to me, and therefore, had to be obtained via patients' GPs'. A standard letter was sent to GPs explaining the purpose of my study and asking for their consent to approach the patient for a follow-up assessment. Also enclosed was a brief questionnaire requesting information regarding each subject's present psychiatric status, psychotropic medication, if any, and previous hospital admissions. The same questionnaire had been used successfully in other twin studies completed in the department (Lewis et al,1989). Depending on each case, the GP replied whether or not the patient could be approached, and returned the completed questionnaire. Thus, in some cases although the probands were not available for a follow-up interview, nonetheless, their GP was able to provide some follow-up information about the proband. Once the proband was located and the GP's consent obtained, he/she was then contacted by letter explaining the purpose of the study and requesting co-operation. If the proband agreed to participate in the study, an appointment was made for a meeting either at their home or at our office, in order to conduct a detailed follow-up assessment.

Up to this stage the tracing and contacting procedure was conducted by mail and usually took 16-30 weeks.

The entire tracing procedure was repeated for all co-twins. At times, as part of the proband's follow-up assessment, details of the co-twin were sought so that he/she could then be contacted. In addition, the address or telephone number of the mother, if still alive, was obtained. Where applicable, further information regarding the subject's death was also gathered from relatives (primarily co-twins and/or mother) and, occasionally, from family practitioners and hospital case-records. Where attempts to locate the proband or co-twin were unsuccessful, I resorted to the following two alternatives: first, letters were sent to proband's last known address and/or to proband's next of kin as extracted from previous hospital casenotes. Second, the "untraced" cases were re-submitted to NHSCR and the various local health authorities after 6-12 months to check if a change in circumstances with time might have led to re-registration with a new GP.

## 4.3. Follow-Up Assessment

At follow-up, probands and their co-twins were interviewed personally, where possible. These interviews were conducted by two experienced psychologists, blind to the index diagnosis and zygosity. Evaluations carried out on probands and co-twins included: (1) assessment of "**past" and "current" axis I and II disorders** with standardised clinical interview schedules (SADS-L & IPDE); (2) **long-term outcome** assessed on multiple outcome variables such as psychopathology, treatment, employment, social activity, interpersonal relationships, living situation, and global functioning since index contact. An adaptation of McGlashan's Total Follow-up Period Outcome Scale (1984) was used to evaluate outcome for the entire follow-up period; (3) **premorbid measures** of verbal intelligence (National Adult Reading Test), adolescent friendship patterns and childhood neurotic traits; (4) RDC-**family history of psychiatric disorders** in first and second degree relatives; (5) **non-genetic putative risk factors** such as obstetric complications, history of head injury, fits/ convulsions, and laterality (modified Annette Handedness questionnaire); and (6) **adverse life events** including parental marital discord, separations, death in the family, whether put in-care/ childrens' home, history of

physical and sexual abuse, family history of alcohol/substance abuse or suicidal behaviour.

Besides personal interview with the probands/co-twins, clinical and follow-up information was gathered from several other sources. Attempts were made to obtain clinical information from all hospitals where the patient may have had contact since time of index registration until current follow-up, as well as medical information from the responsible GPs. Where proband was unavailable at follow-up, contact was made with the co-twin, or other close relative or friend, in order to gather further follow-up data. Postal questionnaires were sent out to those subjects unwilling to have a face-to-face interview, and efforts made to persuade them to agree to a telephone conversation instead.

## 4.4. Diagnostic Instruments Used in the Study

Systematic psychiatric assessments were made on all subjects for a wide range of mental state disorders and personality disorders, based on multiple sources including a face-to-face interview with subjects, where possible.

(1) Schedule for Affective Disorders and Schizophrenia - Lifetime Version (SADS-L): Psychiatric disorders were assessed with the SADS-L (Spitzer & Endicott,1978). It allows one to assess a wide range of functional psychiatric disorders (24 types) according to Research Diagnostic Criteria (RDC; Spitzer et al,1978).

(2) International Personality Disorder Examination (IPDE): Personality disorders were evaluated with IPDE Version 1.0 (Loranger et al,1988). The IPDE is a modification of the Personality Disorder Examination (Loranger, 1988) for international use and compatible with both the ICD-10 and DSM-III-R classification systems. A total of 164 questions are arranged under six headings: work, self, interpersonal relationships, affects, reality testing, and impulse control to allow a relatively natural flow, and facilitate rapport between the subject and the interviewer. It emphasizes persistence and early onset by evaluating attitudes and behaviours for the past five years, and also

enquires about the age of onset of pathologic attitudes and behaviours, stipulating that at least one criterion be present before the age of 25 years to make a PD diagnosis. Depending on whether the subject meets the two requirements concerning duration, a positive score is given for '**recent/current**' or '**past**'. Firstly, the behaviour or trait must be present for five years and meet all the requirements concerning frequency, intensity, subjective distress, and social or occupational impairment. Second, the behaviour must have occurred during the past year (12 months). If both these requirements are met, the item is scored 'recent'. If the behaviour has not occurred at all during the past year, but satisfies the five-year rule, the item is scored 'past'.

A detailed item-by-item scoring manual is provided to minimize the role of subjectivity. It defines the scope and meaning of each criterion, and provides guidelines and anchor points for scoring. The items are scored from 0 through 2. The final score not only yields information about the presence or absence of each criterion and disorder but also provides a dimensional score for all subjects on each disorder, regardless of whether they receive the diagnosis or meet any of the criteria for the disorder. More important, it has been shown to possess excellent inter-rater reliability (through the use of co-rated videotapes) with good temporal stability (Loranger et al,1994). In addition, it is less prone to halo effects in which ratings of individual criteria are influenced by how close an individual is to meeting the criteria for the disorder, or ratings of certain disorders are influenced by whether criteria for other disorders are already met. Because the bias of halo effects is minimized in the IPDE format, it is therefore also more appropriate for examining the issue of comorbidity. Despite its strength, the IPDE suffers from the drawback of taking longer (between 2 to 3.5 hours) time compared to other instruments.

The SADS-L and IPDE were administered by one examiner; the SADS-L preceded the IPDE, in order to help the examiner distinguish better between state and trait examples whilst rating.

## 4.5. Outcome Assessment

Outcome was assessed multi-dimensionally, at 2-22 years follow-up (mean 13 years after

index contact), from several sources including personal interview with the patients and/or close informant. An adaptation of McGlashan's Total Follow-up Period Outcome Scale (1984) was used to evaluate outcome in several areas on 5-point scales ranging from 0 to 4. Generally, the direction of scoring was such that 0 was the best score a patient could achieve and 4 was the worst. Attention was focused in the following seven main areas:

(i) *Psychopathology*. Detailed assessment of both 'lifetime'(ever) and 'current' axis I and II disorders was carried out, blind to the patients' index status, with standardized interview schedules (SADS-L & IPDE) at follow-up. The clinical data was summarised into a single index of overall severity of personality disorders on a 5-point scale ranging from "0" (indicating traits never bother patient) to "4" (indicating unable to function) based on the degree of impairment in patient's life (work, social and family life).

(ii) *Further treatment* during follow-up included total number of hospitalizations since index discharge, any outpatients' contact or contact with family practitioners during the follow-up period, and its duration in months, as well as medication, if any, at follow-up.

(iii) *Employment* since leaving school was obtained and an estimate of the percent of time being actively employed since index discharge from Maudsley Hospital was made. Employment was defined as doing work for pay, or pursuing studies as a student, caring for a household and raising children, or engaging in volunteer work. Social class was also coded based on present occupation and qualifications at follow-up according to the Registrar General Report.

(iv) *Social activity* ratings were based on the approximate number of times the patient met with friends outside their family over the entire follow-up period, and the total number of close friends he/she had, if any. In addition, premorbid friendship patterns between age 12-18 were assessed retrospectively at follow-up interview.

(v) *Marital and family relationships* were assessed in terms of the patients' satisfaction with partner(s), own children, and family members, and whether the patient had changed their marital status during the follow-up period.

(vi) *Living situation* at follow-up refers to information regarding residential arrangements such as whether patient lived in a hostel, alone in a rented or self-owned accommodation, with friends, own family or with family of origin.

(vii) *Global functioning over the total follow-up period* is an accumulative rating on the overall level of functioning based on the sum of five individual outcome measures (i) to (v) outlined above. The global scale is longitudinal and pertains to the entire follow-up period. A score of 0 or "good" meant that, on average, a patient reported normal functioning, was symptom-free with no further hospital contact, and was employed and socially active most of the follow-up period. Such patients were usually capable of stable intimacy. Likewise, a patient scoring 1 or "fairly good" remained symptom-free for the majority of the follow-up period, was treated mainly by GP for brief periods, almost never re-hospitalised, was employed and socially active most of the time. A patient scoring 2 or "moderate" indicated normal functioning for approximately half of the follow-up period. For the other half of the time, they reported experiencing symptoms that required further hospital treatment and medication, worked for about half of the time, had friends but saw them infrequently, and experienced relationship difficulties during such periods. A patient scoring 3 or "marginal" was likely to have reported normal functioning over just one-quarter of the follow-up period. For the rest of three-quarters of the period they would have experienced debilitating symptoms, had to spend time in hospitals and sheltered settings, been on medication, worked for less than one-fifth of the time or seldom, had poor social contacts and much dissatisfaction with close relationships. A score of 4 or "poor" meant that the patient had virtually no period of normal functioning, was symptomatic the entire period and institutionalised. The patient was unemployed, socially isolated and unable to sustain close relationships over the follow-up period.

## 4.6. Diagnostic Assignment

Multiple diagnoses of PD were observed among probands both at index and at follow-up. Each proband was assigned diagnoses depending on the total number of criteria met for any DSM-III-R category and no diagnostic hierarchy was used as this procedure was

considered somewhat arbitrary and would have failed to demonstrate the overlapping features of PD categories and any likely diagnostic change over time. All "probable" and "definite" cases were combined in this study. Subjects who failed to meet sufficient criteria for each PD category were coded as negative cases (ie. diagnosis absent). Additional information on the total number of criteria met, as well as the dimensional score for each PD category was also recorded.

## 4.7. Inter-rater Reliability

Clinical assessments at follow-up were shared between two trained interviewers, blind to their index diagnosis. Both assessors had extensive experience in interviewing and rating symptoms in psychiatric patients. Each interviewer completed a one-week training program on IPDE conducted by its author, Dr. A.W. Loranger. To establish a measure of reliability for the ratings of the PD criteria (dimensional measure) and diagnoses (categorical measure), an observer-rater design was used in which the two interviewers each rated a randomly selected sample of 10 patients. All patients were interviewed by one interviewer, while the second team member sat silently as an observer, or made her ratings based on the audiotaped interviews. The mean intraclass correlation coefficient for the dimensional score of all DSM-III-R PD categories combined was 0.99. Intraclass correlation coefficients for specific DSM-III-R categories ranged from 0.82 (for obsessive-compulsive & avoidant PD) to 0.99 (for antisocial & borderline PD). The kappa co-efficient for the presence of any DSM-III-R PD was 0.78. K values for specific PD categories are not reported because of very few cases in each category thereby rendering kappa values unstable.

## 4.8. Follow-up Subgroup Bias Testing

Virtually all follow-up studies have subjects who cannot be found or who refuse participation, thus raising the issue of whether they eventually end up with biased subsamples. To examine any such presence or absence of bias at follow-up in this study, comparisons were made between the missing cohort (refusals + no reply + no trace + abroad) with the participating cohort (interviewed) on baseline measures to test whether

these groups had different profiles on demographic and diagnostic variables including baseline PD diagnoses derived by applying DSM-III-R system. In all, 39 variables were tested, categorical variables with corrected chi-square test and continuous variables with Student's t-test. Because this involved the simultaneous testing of several hypotheses (variables), the Bonferroni inequality was introduced to correct for significant findings emerging by chance alone (Grove & Andreasen, 1982). For an overall a level set at 0.05 and close to 40 variables being tested, this meant setting significance for each individual test at .001.

## 4.9. Determination of Twin Zygosity

Twin zygosity was established by two methods: physical resemblance questionnaire and blood tests. All twins completed a questionnaire on physical resemblance including how often and by whom the twins' identities were confused. Response to the questionnaire has been previously shown to be highly predictive of zygosity (Torgersen,1979). In addition, serological matching of 6-8 blood antigens was carried out in same-sex twin pairs, where possible, to establish zygosity. If the pair disagreed on any one of the above groups they were classified as dizygotic.

# CHAPTER 5. DATA ANALYSES

Evaluation of long-term outcome in personality disorder patients, and their co-twins, generated enormous data which was subsequently analyzed in different stages, using a range of statistical methods, to test specific hypotheses relating to various aspects of outcome. For convenience, the statistical methods employed in Part II of the thesis are briefly outlined under three headings as follows: descriptive analyses, measures of degree of association, and multivariate analyses. All data analyses were carried out with statistical computing package, SPSS for Windows - Version 5 (Norussis,1993).

## 5.1. Descriptive Analyses

In the first instance, exploratory data analysis was conducted in order to describe the clinical and demographic characteristics of the study sample, at index and at follow-up. Frequency distributions and descriptive statistics such as means, standard deviations and range were computed depending on whether the data were categorical (qualitative) or continuous (quantitative). Next, comparisons were made on the averages of two groups of subjects using a choice of simple statistical tests. For independent samples, chi-square or Fisher's Exact tests (where the number in any 2x2 cell was less than 5) were performed on categorical data, and t-tests on interval data (eg. mean age at index or total number of DSM-III-R criteria met). Two-tailed tests were employed in all analyses. One-way analysis of variance was used to examine the effect of the length of follow-up on the proportion of patients indicating improvement at follow-up. For ordinal data (eg. outcome ratings on 5-point scale), Mann-Whitney U tests were performed to test if two groups of subjects were significantly different in the pattern of ratings. For related samples, when the same subject was tested under both conditions or for within-twin pair comparisons, McNemar tests were used for categorical data and paired samples t-tests for interval data.

Throughout the study, parallel data analyses was conducted for two PD cohorts: a broadly-defined cohort (those with a clinical PD diagnosis at index) and a narrowly-defined cohort (DSM-III-R PD diagnosis at index). Comparisons were made on

demographic and clinical characteristics (a) within proband subgroups such as those cases with DSM-III-R PD vs non DSM-III-R PD cases, or 'good' outcome group vs 'poor' outcome group of PD patients, and where appropriate, (b) between the broadly- defined PD group and their co-twins.

## 5.2. Measuring Degree of Relationship among Two or more Variables

For the purpose of identifying significant relationship among two or more variables, a variety of statistical procedures were performed depending on the research question. In simplistic form, odds ratios with 95% confidence intervals were computed for the odds of each pair of variables occurring together compared with the odds for occurrence of each variable alone. Generally, in a large sample, odds ratios greater than 2 are considered noteworthy. But in small samples, odds ratios may appear large, accompanied by large 95% confidence intervals. Under these circumstances, p values were used as a guide to identify significant co-occurrences.

Next, having established an association between two or more variables, this was exploited to predict the values of one variable from knowledge of other variable(s) using regression. As virtually all dependent variables examined in this study were dichotomous or nominal (such as borderline vs non-borderline PD, poor vs good outcome), logistic regression model was used to predict the probability of occurrence of dependent variable, given a set of independent variables. For example, good or poor outcome at follow-up was predicted based on demographic data at index such as level of education, social class, and whether the patient received inpatient rather than outpatient treatment. Additionally, logistic regression allowed one to adjust for confounding effects. Thus, using the above example, it is likely that because educational level is also independently associated with social class at index, the latter may bear a spurious confounded association with outcome at follow-up. So, when all three demographic variables (educational level, social class & inpatients vs outpatient status at index) are entered into the model to predict global outcome at follow-up, the confounder variable, in this case social class at index, will be eliminated from the final fit. Although logistic regression modelling techniques are powerful, their utility is clearly dictated by the choice of

variables entered into the equation. If inappropriate variables are entered into the model, this may result in yielding spurious associations which do not reflect the reality.

To control for potential confounding, logistic regression analyses, using Wald's forward stepwise method was employed. Covariates were entered when the chi-square significance was less than 0.05, or when the odds ratio of their association equalled 2.0 or more. Removal testing was based on the probability of Wald statistic. The final model, indicating the best fit, revealed the confounding covariates which explained the previous statistical association between variables prior to the controlling procedure. These are presented in tables in each chapter.

## 5.3. Predictive Statistics

In Chapter 9 mortality data was analyzed using special statistical techniques namely, survival analyses, to examine the relationship between patient characteristics and survival at follow-up. Two-phase analyses were conducted on proband data alone. In the first phase, the survival time from the index diagnosis of personality disorder until death (by suicide) was compared between two groups by Kaplan-Meier log rank test. Log rank statistics were used to test the null hypothesis that, in the population, the two survival functions were equal. The groups were defined by presence/absence of various clinical and demographic variables. Clinical variables included each axis II category and "lifetime" axis I disorders (RDC defined) in patients. Next, having identified the significant risk factors, all these variables were entered into Cox's regression using forward stepwise-likelihood ratio method, in order to examine the independent relationship between suicide and axis I and II disorders, taking into account the presence of other confounding variables in the equation. Summary of the final models are presented in odds ratios and 95% confidence intervals.

## 5.4. Examination of Diagnostic Agreement

Kappa (k) statistics were used to examine the degree of agreement on PD diagnoses (a) assigned at index by clinicians' versus researchers' using hospital case-records, and (b)

obtained from case-records by applying DSM-III-R criteria at index versus axis II diagnoses obtained by IPDE interview at follow-up.

## 5.5. Co-twins as Comparison group

In part of the study, co-twins were used as comparison group, particularly in the mortality sub-study. Mortality data was available on 154 pairs of twins. The proportion of pairs where both members died, both survived, proband died but co-twin survived and vice versa were computed, and estimates of 95% confidence interval were made for total mortality (dead vs alive) and by cause of death (suicide vs non-suicide). Concordance for mortality (and suicide) was reported for MZ and DZ (same-sex & opposite sex combined) pairs although no estimates of heritability and environmental factors were calculated because the study sample was ascertained for diagnosis of PD rather than for mortality, and the number of affected cases was very small. Double probands (5 pairs) were included twice in twin analyses, ie. once in the proband group and again in the co-twin group, because each of the ten patients were seen at the Maudsley Hospital independent of their co-twins' referral, and were therefore, strictly treated as separate pairs in the mortality analyses.

At times, the decision not to use the co-twins as a comparison group in other parts of the study (eg. in Chapter 11 on outcome predictors) was taken because of the relatively small number of completed pairs where full IPDE and outcome data was available on both alive members of the twin pair. Results based on such a highly selected subsample would have been misleading and no firm conclusions could be drawn from them. Thus, in such instances, statistical analyses were restricted to the proband group alone.

# CHAPTER 6. THE FOLLOW-UP

## 6.1. Tracing and Interviewing Subjects at Follow-up

Table 6.1 presents the follow-up status of probands and cotwins. Of the initial 197 probands, 164 (84.1%) were located at follow-up. Adequate follow-up data was obtained on 154 (78.9%) cases. A total of 91 (46.2%) patients were interviewed personally at follow-up, of whom six failed to complete the IPDE, but co-operated with the remaining follow-up assessment. Among the six probands who did not complete the IPDE, I was able to generate DSM-III-R diagnosis of antisocial PD in three cases based on information collected by SADS-L and/or partial IPDE. In addition, informant-based detailed follow-up information was obtained on a further 12 (6.1%) probands who also completed postal questionnaires. 20 (10.1%) probands had died at follow-up. 8 (4%) probands were living abroad, hence, non-locatable through the NHSCR. Of the remaining 66 probands, 25 (12.7%) were untraceable, 19 (9.6%) refused to participate in the study and 21 (11.2%) probands ignored our repeated requests for their co-operation (ie. indirect refusals).

Following-up the cotwins was considerably more difficult than for the proband group. Of the 97 (63.4%) cotwins successfully traced at follow-up, adequate follow-up information was obtained for 58 (59.8%) cases. In all, 44 (28.8%) cotwins were interviewed at follow-up. Detailed follow-up data on a further 14 (9.2%) cotwins was collected through postal questionnaires and/or interview with a close informant. In contrast to the probands, fewer cotwins (N=4, 2.6%) had died during the study period. Almost one-third (N=46, 30.1%) of the cotwins refused, directly or indirectly (by choosing not to reply to my repeated requests), to participate in the investigation. The remaining one-third of the cotwins could not be located successfully at follow-up, including 12 (7.8%) cases residing abroad. Regardless, of whether the cotwins were traced or not, I had access to the criminal records of the vast majority of the cotwins. Also, where psychiatric history in the cotwins was known, efforts were made to obtain discharge summaries from previous hospitals.

*Table 6.1. Status of probands and cotwins at follow-up, mean 13 years later*

| **Follow-up situation** | **Probands N=197 (%)** | **Cotwins N=153 (%)** |
|---|---|---|
| Interviewed at follow-up | 91 (46.2) | 44 (28.8) |
| Completed questionnaires/Informants' FU data | 12 (6.1) | 7 (4.6) |
| Deceased but good follow-up/clinical data | 18 (9.1) | 2 (1.3) |
| Deceased & poor clinical information | 2 (1.0) | 2 (1.3) |
| Refused but good follow-up/clinical data | 13 (6.6) | 3 (2.0) |
| Refused & poor follow-up/clinical data | 6 (3.0) | 15 (9.8) |
| No reply but good follow-up/clinical data | 15 (7.6) | 1 (0.7) |
| No reply & poor follow-up/clinical data | 7 (3.6) | 27 (17.6) |
| Living abroad but good follow-up/clinical data | 5 (2.5) | - |
| Living abroad & poor follow-up/clinical data | 3 (1.5) | 13 (7.8) |
| No trace but sufficient clinical information | 12 (6.1) | 1 (0.7) |
| No trace & poor follow-up/clinical data | 13 (6.6) | 40 (26.1) |

## 6.2. Follow-up Subgroup Bias Testing

To test for bias of missing subject subsample in this study, comparisons were made between the missing cohort combined (refusals + no reply + no trace + abroad) with the participating cohort (interviewed) on baseline measures to test whether these groups had different profiles on demographic, family history and diagnostic variables listed in Tables 5.1 and 7.2. They were also compared on the baseline PD diagnoses derived by applying the DSM-III-R system. In all, 28 variables were tested, categorical variables with chi square test and continuous variables with t-tests. Because this involved the simultaneous testing of several hypotheses (variables), the Bonferroni inequality was introduced to correct for significant findings emerging by chance alone. For an overall **a** level set at 0.05 and close to 30 variables being tested, this meant setting significance for each individual test at .01. No significant differences between groups emerged on all but one variable. In contrast to the interviewed sample, fewer non-participators were admitted as inpatients ($X^2=6.25$, $df=1$, $p<.01$).

To summarise, almost half of the original proband sample was interviewed at follow-up, an average of 13 years after their index contact with the Joint Hospital. On the whole, using multiple sources, adequate follow-up information was obtained on 79% of the probands. The interviewed proband subsample was representative of the original sample on virtually all demographic and diagnostic variables at index, except for a significant excess of inpatients among the interviewed probands. In contrast, eliciting cooperation from the cotwins at follow-up was considerably more difficult. Less than one-third of 153 cotwins were successfully interviewed at follow-up; the remaining two-thirds either refused directly or indirectly to participate in the investigation, or could not be located.

# CHAPTER 7. CLINICAL STATUS OF SUBJECTS AT INDEX CONTACT

## 7.1. Clinical Description of the Subjects at Index Contact

### 7.1.1. Clinicians' PD Diagnoses

Table 7.1 shows the actual breakdown of patients by clinicians' diagnosis of ICD-9 personality disorders. The three most common diagnosis assigned by the clinicians' were personality disorder unspecified (36%), sociopathic/asocial PD (13.2%) and asthenic PD (10.7%). Clinicians' seldom assigned multiple diagnoses of PDs. In addition, less than half (45.2%) of the probands were given a differential diagnosis of axis I disorders, mainly neurotic disorders including neurotic depression (36.0%).

*Table 7.1. Sample distribution by hospital diagnosis (ICD-9) given at index*

| **ICD-9 personality disorder hospital diagnosis** | **N (%)** |
|---|---|
| 301.0 Paranoid | 7 (3.6) |
| 301.1 Affective | 16 (8.1) |
| 301.2 Schizoid | 9 (4.6) |
| 301.3 Explosive | 13 (6.6) |
| 301.4 Anankastic | 9 (4.6) |
| 301.5 Hysterical | 10 (5.1) |
| 301.6 Asthenic | 21 (10.7) |
| 301.7 Sociopathic or Asocial manifestation | 26 (13.2) |
| 301.8 Other | 15 (7.6) |
| 301.9 Unspecified | 71 (36) |

### 7.1.2. Application of DSM-III-R PD diagnoses to hospital case-records of all subjects at Index Contact

Because clinical diagnoses are based on inconsistent and unspecifiable set of criteria

which may have changed over the years, all probands were re-diagnosed according to DSM-III-R criteria. Table 7.2 presents the axis II categories assigned to all the probands at index contact. Roughly three-fourth (N=145, 73.6%) of the probands met DSM-IIIR criteria for at least one PD, the remaining one-fourth (N=50, 25.4%) failed to meet sufficient criteria for any DSM-III-R PD. The four most common PD diagnoses were: NOS (33%), antisocial (25.4%), borderline (24.3%), and avoidant (22.8%) PD. Of the 145 cases with PD diagnoses, almost two-thirds (N=90, 62.7%) satisfied criteria for two or more PD diagnoses (range between 2-6, mean equal 2.2). Comorbidity was prominent among cluster B PDs, and avoidant PD from cluster C disorders.

*Table 7.2. Personality disorder diagnoses assigned to 197 patients at index contact based on hospital case-records.*

| **DSM-III-R PD** | **N=197 (%)** |
|---|---|
| None | 50 (25.4) |
| Any PD diagnosis | 145 (73.6) |
| Paranoid | 14 (7.1) |
| Schizoid | 11 (5.6) |
| Schizotypal | 10 (5.1) |
| Antisocial | 50 (25.4) |
| Borderline | 48 (24.4) |
| Histrionic | 38 (19.3) |
| Narcissistic | 3 (1.5) |
| Avoidant | 45 (22.8) |
| Obsessive-compulsive | 6 (3.0) |
| Dependent | 20 (10.2) |
| Passive-aggressive | 1 (0.5) |
| Self-defeating | 3 (1.5) |
| Sadistic | 5 (2.5) |
| Not Otherwise Specified | 65 (33.0) |

A preliminary comparison between clinicians' diagnoses and researchers' DSM-IIIR diagnoses of PDs at index (based on hospital case-records) indicated a close correspondence between the diagnoses derived from two separate sources. On the whole,

researchers' diagnoses were in agreement with clinicians' opinion on the broader distinction of presence of any DSM-III-R PD. With regard to specific PD sub-categories, good correspondence was observed for the most common diagnoses assigned by the clinicians' and by the researchers employing DSM-III-R criteria. But, not surprisingly, those categories exclusive to DSM-III-R such as narcissistic, passive-aggressive, self-defeating and sadistic, had the lowest number of cases. Information to rate these subcategories was unavailable in the casenotes.

Table 7.3 presents the comparison of clinicians' PD diagnosis and DSM-III-R research diagnosis from casenotes in the total patient sample. In general, researchers' agreed with the clinicians' on the broad distinction of presence or absence of any PD diagnosis. However, clinicians'/ researchers' diagnostic correspondence was variable for specific PD categories; better agreement was noted for sociopathic/antisocial ($p < .001$), and hysterical/histrionic ($p < .001$) categories. However, McNemar tests yielded non-significant association between clinicians'/researchers' diagnoses of paranoid, schizoid, anankastic/ obsessive-compulsive and Not Otherwise Specified PD categories. No doubt some of these differences are attributable to the actual differences between the ICD-9 classification used by the clinicians and the DSM-III-R system employed by the researchers in the present study.

A close examination of those 50 probands with no DSM-III-R diagnosis at index indicated that half of these cases had either a hospital ICD-9 diagnosis of unspecified 301.9 (36.0%) or affective 301.1 (14.0%) PD.

## 7.2. DISCUSSION

This study provided an excellent opportunity to examine, in a retrospective manner, the diagnostic practice of clinicians for a cohort of personality disorder patients who were then followed-up after a mean period of 13 years. The purpose of this study was to examine the correspondence between PD diagnoses assigned by the original interviewing clinician with researchers' PD diagnoses assigned at index contact using DSM-IIIR criteria on hospital case-records. Of particular interest are two issues: i) which PD categories show good or poor agreement between diagnoses assigned by clinicians' and researchers' based on casenote information? ii) to look specifically at those cases who failed to satisfy criteria for any DSM-IIIR PD, and identify the most common PD

*Table 7.3. Relationship between ICD-9 PD diagnosis assigned by clinicians and DSM-III-R PD diagnoses assigned by researchers' at index contact from case-records (N=197).*

| Index Diag | ANY N=145 | PARA N=14 | SZD N=11 | STYP N=10 | ASP N=50 | BORD N=48 | HIST N=38 | NARC N=3 | AVOI N=45 | DEPD N=20 | OCPD N=6 | PASS N=1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hosp Diag PARA N=7 | 5*** | 2 | 1 | 0 | 1*** | 0 | 0 | 0 | 1*** | 0 | 0 | 0 |
| AFFEC N=16 | 9*** | 0 | 2 | 1 | 1*** | 4*** | 4** | 0 | 5*** | 1 | 2 | 0 |
| SZD N=9 | 9*** | 1 | 5 | 4 | 0 | 2*** | 1 | 0 | 7*** | 0 | 0 | 0 |
| EXPL0 N=13 | 7*** | 3 | 0 | 0 | 4*** | 2*** | 1** | 0 | 2*** | 1 | 0 | 0 |
| ANAN N=9 | 4*** | 1 | 0 | 0 | 1*** | 1*** | 1*** | 0 | 1*** | 0 | 1 | 0 |
| HYST N=10 | 9*** | 0 | 0 | 0 | 0 | 3*** | 5*** | 0 | 3*** | 3 | 0 | 0 |
| ASTH N=21 | 16*** | 1 | 1 | 1 | 8** | 6** | 3 | 1*** | 5* | 4 | 0 | 0 |
| SOCIO N=26 | 23*** | 1 | 0 | 1 | 19** | 8** | 7 | 1*** | 3* | 1 | 0 | 1*** |
| OTHER N=15 | 12*** | 1 | 0 | 0 | 4*** | 3*** | 4** | 0 | 3*** | 1 | 1 | 0 |
| UNSPC N=71 | 51*** | 4*** | 2*** | 3*** | 12 | 19* | 12** | 1*** | 15* | 9*** | 2*** | 0 |

*McNemar tests performed to examine the agreement between clinicians' PD diagnoses vs researchers' diagnoses. *** p<.0001, ** p<.001, * p<.01*

*Table 7.3. Relationship between ICD-9 PD diagnosis assigned by clinicians and DSM-III-R PD diagnoses assigned by researchers' at index contact from case-records (N=197)* ***[cont'd]***

| **Index Diag** | **SLFDF N=3** | **SADIS N=5** | **NOS N=65** | **NONE N=50** |
|---|---|---|---|---|
| Hosp Diag | | | | |
| PARA (N=7) | 0 | 0 | 3*** | 2*** |
| AFFEC (N=16) | 1* | 0 | 4*** | 7*** |
| SZD (N=9) | 1 | 0 | 2*** | 0 |
| EXPL0 (N=13) | 0 | 0 | 4*** | 6*** |
| ANAN (N=9) | 0 | 0 | 2*** | 5*** |
| HYST (N=10) | 0 | 0 | 2*** | 1*** |
| ASTH (N=21) | 0 | 1 | 10*** | 5*** |
| SOCIO (N=26) | 0 | 2** | 7*** | 3*** |
| OTHER (N=15) | 1* | 0 | 4*** | 3*** |
| UNSPC (N=71) | 0 | 2*** | 27 | 18*** |

*McNemar tests performed to examine the agreement between clinicians' PD diagnoses vs researchers' diagnoses. *** $p<.0001$, ** $p<.001$, * $p<.01$*

diagnoses clinicians gave such cases.

Broadly speaking, good agreement was observed between clinicians' diagnoses and DSM-III-R diagnoses assigned by researchers' on hospital case-record data at index contact for the broad distinction of presence of any PD diagnosis, as well as for the most common PD diagnoses among probands namely, NOS, followed by sociopathic/antisocial PD. However, correspondence between clinicians' diagnoses and researchers' diagnoses was less impressive for specific PD categories particularly paranoid, schizoid and anankastic/ obsessive-compulsive PD. Better agreement was found for sociopathic/antisocial and hysterical/ histrionic categories.

A closer examination of the 50 probands who failed to satisfy criteria for DSM-IIIR PD revealed a wide range of PDs assigned by the clinicians', although half of this subsample had a clinical diagnosis of unspecified or affective PD. The diagnosis of borderline PD, which was unavailable to clinicians since it was not included in ICD-9, was found to extensively overlap with several PD categories (assigned by clinicians). It is plausible that borderline PD diagnosis may reflect generalised dysfunctioning, in view of its pervasive co-occurrence with a wide range of PDs. Similar argument has been made by other researchers (Nurnberg et al, 1991) who also report that borderline PD constitutes a broad, heterogenous category with unclear boundaries that embrace a general personality disorder concept which is a significant component among a number of different disorders. Such an argument may seem particularly relevant to the present study sample which is hospital-based and therefore represents the more ill spectrum of PD cases who seek help for multiple problems.

Crude comparison between axis II diagnoses assigned by clinicians and by researchers in this study revealed some interesting findings regarding diagnostic practices commonly exercised by clinicians with patients presenting personality problems. Results indicated that clinicians were more likely to use a single PD diagnosis despite pronounced co-occurrence of other PDs. Also, they were often reluctant to specify PD category, except sociopathic category, alongwith a tendency to use "unspecified" PD category as a "wastebin" code for patients considered to have personality problems. These findings are consistent with previous reports that suggest that the most common clinical diagnosis in hospital admissions for personality disorders was mixed/other/atypical type

(Loranger,1990).

Two Study Cohorts

Based on the clinical status of the probands at index contact, the study sample consisted of two cohorts: a broadly defined group comprising 197 probands with clinical diagnosis of PD, and a narrowly defined group comprising 145 probands with DSM-III-R PDs. Results on the long-term outcome will be presented separately for these two proband groups in the following chapters.

Methodological Limitations

The study illustrates the inherent methodological problem in interpreting data about PDs derived from hospital case-records. There are serious limitations in having to rely on medical notes to make a diagnosis. The rater is restricted by information available in the casenotes, which in turn, may be influenced by several factors including the degree of training the clinician may have received in diagnosing PDs in patients, the availability of a clear description of patients' specific behaviours/attitudes that may have influenced their diagnostic judgement, duration of contact a patient may have had with the hospital/clinician, details of other axis I conditions (past and present), etc. In the present study, for many cases with no DSM-III-R PD diagnosis at index, their casenotes had insufficient information to rate all criteria. Some patients were seen only once, and nearly one-third of the patients were seen for a brief period (less than 1 month). Others were still too young (18-20 yrs of age), thus failing to satisfy the duration requirement. Part of this problem was resolved when some of these patients were interviewed at follow-up and subjected to detailed assessment.

Another limitation of obtaining PD diagnoses from case-records alone was that certain PD categories were under-represented or unidentified, particularly those categories exclusive to DSM-III-R such as narcissistic, passive-aggressive, and self-defeating PD. Thus, researchers with specific interest in these PDs must evaluate their presence by the interview method rather than rely on case-records.

Finally, the baseline measures may be influenced by the selection of the study population. For example, only those patients with a final diagnosis of PDs according to ICD-9 Section 301 were included in the investigation. Other patients whose diagnostic formulation featured premorbid abnormal personality but who were not given a final

diagnosis of ICD-9 PD on hospital discharge summaries were excluded from the study. Sample selection based on the clinicians' interpretation of ICD-9 Section 301, should be borne in mind when interpreting the results. The limitations of such a selection procedure have been illustrated by Mann et al (1981) in a pilot study in which the first author reviewed the final diagnosis and diagnostic formulation of 100 consecutive admissions to the Professorial Unit of the Joint Hospitals. Closer examination of formulation of the cases revealed that for as many as 42 of the 90 cases which contained adequate information, an abnormal personality was regarded as a significant aspect of the clinical picture. However, when an attempt was made to classify the 42 personality descriptions according to ICD Section 301, only 19 cases could be matched satisfactorily. The authors shared Shepherd & Sartorius's (1974) concern that Section 301 of the ICD was inadequate as a means of classifying premorbid personalities of psychiatric hospital patients. This weakness appears to have been redressed in the recent revision, ICD-10, where a more stringent set of criteria are proposed for diagnosing PDs under Section F60.

To summarise, good correspondence was found between clinicians' diagnoses and researchers' diagnoses for the presence of any DSM-III-R PDs; however, agreement on specific PD categories was less impressive, with the exception of sociopathic/ antisocial and hysterical/histrionic PDs. The three most common DSM-III-R diagnoses were Not Otherwise Specified, antisocial and borderline PD.

# CHAPTER 8. DSM-III-R PERSONALITY DISORDERS (USING IPDE) AT FOLLOW-UP IN PROBANDS & COTWINS

## 8.1. DSM-IIIR Personality Disorder Diagnoses at Follow-up in two proband cohorts (broadly- & narrowly-defined)

One of the objectives of this study was to examine the change in diagnoses of personality disorder over time. What proportion of the probands with a clinical diagnosis of personality disorder at index (broadly defined cohort) continue to have a PD diagnosis at follow-up? Likewise, what proportion of probands with DSM-III-R PD diagnosis at index (narrowly defined cohort) no longer satisfy sufficient criteria for a PD diagnosis at follow-up?

IPDE allows the interviewer to assess PDs in subjects for past and present. Therefore, I was able to establish both "lifetime" (ever) and current (past year) diagnoses of DSM-III-R PDs at follow-up with the 88 probands personally interviewed. Tables 8.1 and 8.2 present both "past" and "current" PD diagnoses at follow-up in probands from broadly- and narrowly-defined (N=63) groups, who were interviewed at follow-up.

**Broadly-defined group (N=88)**: Results indicate that just over one-third (38.6%) of the 88 probands seen at follow-up, no longer satisfied sufficient criteria for current diagnosis of DSM-III-R PD. The remaining 61.4% of the cases continued to have PD diagnosis at follow-up. Amongst the PD subcategories represented more often at follow-up, in order of prevalence, were borderline (29.5%), NOS (27.35), and antisocial (23.9%) PD. The prominence of these PD subcategories at follow-up simply reflect their prevalence in the study sample at index contact and does not necessarily imply less improvement over time compared with other less common PD subcategories.

**Narrowly-defined group (N=63)**: A similar pattern of diagnostic change at follow-up was noted for the narrowly-defined group of probands as reported for the broadly-defined group. A smaller proportion of the probands no longer satisfied sufficient criteria for a definite/probable diagnosis of DSM-III-R PD at follow-up (Table 8.2). One-fourth

*Table 8.1. 'Past' and 'Current' (past year) DSM-III-R PD diagnoses of 88 probands (broadly-defined group) interviewed at follow-up.*

| DSM-III-R PD | Past PD N (%) | Current PD N (%) | Change at Follow-up N* |
|---|---|---|---|
| Any PD | 64 (72.7) | 54 (61.4) | **10 p < .002** |
| Paranoid | 15 (17.0) | 14 (15.9) | 1 |
| Schizoid | 3 (3.4) | 2 (2.3) | 1 |
| Schizotypal | 9 (10.2) | 8 (9.1) | 1 |
| Antisocial | 27 (30.7) | 21 (23.9) | **6 p < .03** |
| Borderline | 31 (35.2) | 26 (29.5) | 5 p < .06 |
| Histrionic | 19 (21.6) | 13 (14.8) | **6 p < .03** |
| Narcissistic | 6 (6.8) | 5 (5.7) | 1 |
| Avoidant | 22 (25.0) | 17 (19.3) | 5 p < .06 |
| Dependent | 8 (9.1) | 7 (8.0) | 1 |
| Obsess-Comp | 4 (4.5) | 3 (3.4) | 1 |
| Pass-Agg | 8 (9.1) | 7 (8.0) | 1 |
| Self-defeat | 6 (6.8) | 6 (6.8) | 0 |
| Sadistic | 2 (2.3) | 2 (2.3) | 0 |
| NOS | 29 (33.0) | 24 (27.3) | 5 |

** Diagnostic change at follow-up tested with McNemar test; only statistically significant change in diagnoses are presented in bold print.*

of the 63 probands interviewed at follow-up no longer had diagnosis of DSM-III-R PD, although the majority (74.6%) continued to satisfy criteria for at least one PD diagnosis at follow-up. Here again, the most common PD diagnosis among the probands was borderline, followed by antisocial, NOS and avoidant PD.

In general, these results confirm the persistent and chronic nature of personality disorders which appear to remain relatively stable over time in the majority of patients. But they also lend support to the notion that, gradually with increasing age, some PDs

become less pronounced over time.

## 8.2. "Past" versus "Current" PD Diagnoses: Does diagnostic change,if any, vary for different PD subcategories?

Next, efforts were made to identify those patients with specific PD diagnoses who were more likely to show a diagnostic shift with time? Which PD categories were found to be associated with change (improvement) over time, and which categories were associated with little or no change?

To answer these questions, a more detailed examination of diagnostic change at follow-up was carried out by comparing "past" PD diagnoses with "current" (past 12 months) PD diagnoses in probands, based on interview data. If the subject reported a behaviour or trait which meet all the requirements concerning frequency, intensity, subjective distress, and social or occupational impairment, but has not occurred at all during the past year, it is scored **past**. By relying on interview data gathered retrospectively, one could only make crude observation of trends. Results confirmed that PDs, on the whole, become less pronounced over time, and that certain PD categories appear to improve more than others with age.

Looking at the broadly-defined cohort first, McNemar tests on past and current diagnosis in probands for any DSM-III-R PD indicated a significant diagnostic change at follow-up (64 vs 54, $p < .002$) in terms of a reduction in the total number of criteria met for most PD subtypes at follow-up. Of the 64 patients with at least one lifetime DSM-III-R PD diagnosis, nine (14.1%) cases had remitted at follow-up and received no current PD diagnosis in the past 12 months. A further 28 (43.7%) patients reported some improvement, although they still had problems at follow-up and continued to meet criteria for some PD diagnosis, albeit for fewer categories. The remaining 26 (40.6%) patients reported no personality-related change over time and continued to satisfy criteria for one or more PDs. No PD diagnosis was assigned to 24 (27.3%) of the 88 probands interviewed at follow-up.

On the whole, diagnoses of all PD categories were relatively stable over time. Nevertheless, some PD categories appeared to improve significantly over time and others tended to persist with little or no change into middle age. Significant improvement at follow-up was found particularly in patients with antisocial (27 vs 21, $p<.03$) and histrionic PD (19 vs 13, $p<.03$). A similar trend was noted among patients with borderline (31 vs 26, $p<.06$) and avoidant (22 vs 17, $p<.06$) PD, although the diagnostic change observed over time failed to reach statistical significance. In contrast, little or no change was found at follow-up, several years later, among patients with paranoid, schizoid, schizotypal, narcissistic, dependent, obsessive-compulsive, passive aggressive and sadistic PD.

Furthermore, multiple diagnoses of DSM-III-R PD, were found to decrease over time. Fewer individuals had 2 or more PD diagnosis at follow-up compared with their lifetime evaluation (38 vs 49), however, this difference failed to reach statistical difference ($p<.12$). It appears that the improvement made by patients over time is not only reflected in changing diagnostic status from positive to negative, but is also evident in a decrease in the proportion of cases with multiple (2 or more) diagnoses of PDs.

Likewise, similar trends were observed in probands of the narrowly-defined cohort (Table 8.2). Significantly fewer patients qualified for a current diagnosis of DSM-III-R PD at follow-up compared with 'past' assessment (54 vs 47, $p<.01$). Seven (13%) of the 54 patients assigned a 'past' diagnosis of DSM-III-R PD reported considerable improvement at follow-up and no longer fulfilled criteria for a positive PD diagnosis. A further 27 (50%) patients reported some improvement but still had sufficient psychopathology to meet criteria for some DSM-III-R PD. Here again, as for the broadly-defined proband group, the degree of diagnostic change at follow-up varied for different PD categories. Due to smaller sample size, improvement was noted in fewer cases, hence, fewer statistically significant results. Nonetheless, significant improvement at follow-up was found in patients with histrionic PD (19 vs 13, $p<.03$), and to a lesser extent among patients with borderline PD (30 vs 25, $p<.06$). Minimal or no diagnostic change was found in patients with cluster A disorders, narcissistic PD, or cluster C disorders, except avoidant PD. Multiple diagnoses of DSM-III-R PD were found to

*Table 8.2. 'Past' and 'current' (past year) DSM-III-R PD diagnoses of 63 probands (narrowly-defined group) interviewed at follow-up.*

| DSM-III-R PD | Past PD N (%) | Current PD N (%) | Change at Follow-up N* |
|---|---|---|---|
| Any PD | 54 (85.7) | 47 (74.6) | **7 p < .01** |
| Paranoid | 14 (22.2) | 13 (20.6) | 1 |
| Schizoid | 3 (4.8) | 2 (3.2) | 1 |
| Schizotypal | 9 (14.3) | 8 (12.7) | 1 |
| Antisocial | 24 (38.1) | 20 (31.7) | 4 |
| Borderline | 30 (47.6) | 25 (39.7) | 5 p < .06 |
| Histrionic | 19 (30.2) | 13 (20.6) | **6 p < .03** |
| Narcissistic | 5 (7.9) | 5 (7.9) | - |
| Avoidant | 21 (33.3) | 17 (27.0) | 4 |
| Dependent | 7 (11.1) | 6 (9.5) | 1 |
| Obsess-Comp | 4 (6.3) | 3 (4.8) | 1 |
| Pass-Agg | 8 (12.7) | 7 (11.1) | 1 |
| Self-defeat | 6 (9.5) | 6 (9.5) | - |
| Sadistic | 2 (3.2) | 2 (3.2) | - |
| NOS | 20 (31.7) | 18 (28.6) | 2 |

** Diagnostic change at follow-up tested with McNemar test; only statistically significant change in diagnoses are presented in bold print.*

decrease over time.

## 8.3. Diagnostic Change as a Function of Length of Follow-up

Does diagnosis vary with the length of follow-up and age of the patient? To test for time effects, the follow-up period was divided into three intervals, zero through 5 years, over 5 through 10 years, and over 10 years. Overall diagnostic change was recoded into two categories: change (negative at follow-up) and no change (still positive at follow-up). Table 8.3 presents the distribution of cases with or without any diagnostic change across

three follow-up intervals. Results demonstrate a significant time effect on whether or not patients indicate a change in DSM-III-R PD diagnosis at follow-up ($X^2 = 6.907$, df=1, $p < .03$). By and large, patients were more likely to have a negative diagnosis of PD if assessed at longer follow-up interval of over 10 yrs. These results were confirmed in a one-way ANOVA in which follow-up period was analyzed as a continuous variable (in years). Diagnostic change was significant for DSM-III-R PDs over time ($F=5.45$, $p < .02$). Unfortunately, the present sample was not large enough to examine the time effect for individual PD subcategories, although it is most likely that the diagnostic change was significant for only some PD subcategories but not for other subcategories.

*Table 8.3. Influence of length of follow-up on DSM-III-R PDs diagnostic change in a subgroup of patients (N=88) interviewed at follow-up.*

| | **Follow-up period (years)** | | |
|---|---|---|---|
| | 0 - 5 | 5-10 | 10 + |
| Same diagnosis at FU | 12 | 13 | 29 |
| Diagnosis changed at FU | | | 9 |

*$X^2 = 6.907$, df=1, $p < .03$*

## 8.4. DSM-III-R Personality Disorder Diagnosis at Follow-up among the Cotwins (N=47)

One-third of the total co-twin sample was interviewed personally at follow-up. Of these, 7 (15%) satisfied DSM-III-R criteria for any PD, and the remaining 40 (85%) co-twins had no PD diagnosis at follow-up. Of the 7 PD co-twins, 3 were assigned Not Otherwise Specified PD, one case each of avoidant, schizoid and antisocial PD, and two cases with multiple PD diagnoses. In contrast to probands, multiple diagnosis of PDs was less common among co-twins; over two-thirds of the positive cases had a single PD diagnosis. Cluster B disorders were under-represented among the co-twins seen at follow-up.

## 8.5. Agreement of Axis II diagnoses obtained from Case-records' ratings at Index with DSM-III-R PD diagnoses obtained at Follow-up

Having diagnostic information generated from two separate sources (case-records ratings & interview ratings at follow-up) allowed me to examine whether patients were more likely to be assigned the same diagnosis using two different methods. Diagnostic agreement was examined in two ways: McNemar tests and kappa statistics.

On the whole, poor agreement was observed among cases identified by case-records' ratings and 'past' PD assessment at follow-up, for the broad category of any DSM-III-R PD diagnosis. Of the 88 probands on whom diagnostic data was available at index and at follow-up, 54 (61.4%) were assigned at least one DSM-III-R PD diagnosis on both occasions. Fifteen (17.0%) cases were not assigned any DSM-III-R PD diagnosis on both occasions. And diagnostic disagreement was observed in the remaining one-fifth of the probands (N=19, 21.6%) interviewed at follow-up. McNemar test revealed that patients assigned a DSM-III-R PD diagnosis at index based on case-records, were not significantly more likely to have a 'past' PD diagnosis at follow-up ($p < 1.00$). Thus, poor agreement was found on the presence or absence of any DSM-III-R PD when diagnosis was obtained from two separate sources namely, hospital case-records and patient interview at follow-up.

However, agreement regarding the presence of specific PD categories was variable (Table 8.4). In general, diagnostic agreement was fair for borderline (0.57) and antisocial PD (0.53), but poor for other categories. McNemar tests confirmed that patients assigned the diagnosis of borderline ($p < .007$) and/or antisocial PD ($p < .08$) at index were more likely to have the same diagnoses based on 'lifetime' assessment by interview method at follow-up. Correspondence for diagnoses of other PD categories such as paranoid, avoidant, histrionic, dependent and NOS PD was unimpressive. Kappa values were not calculated for PD categories with less than 5 cases. Significantly, more cases were diagnosed as paranoid (5 vs 15), borderline (20 vs 31) and passive-aggressive (0 vs 8) at follow-up based on personal interview than by case-record ratings at index.

*Table 8.4. Agreement of DSM-III-R PD diagnoses obtained from casenotes at index and from lifetime assessment by interview at follow-up (N=88)*

| **DSM-III-R PDs** | **Kappa ('Past' PD)** | **Kappa ('Current' PD)** |
|---|---|---|
| Any PD | 0.46 | 0.42 |
| Paranoid | 0.23 | 0.25 |
| Schizoid | - | - |
| Schizotypal | 0. | 0.47 |
| Antisocial | 0.53 | 0.55 |
| Borderline | 0.57 | 0.57 |
| Histrionic | 0.36 | 0.34 |
| Narcissis | - | - |
| Avoidant | 0.21 | 0.18 |
| Obsess-Compl | - | - |
| Dependent | 0.40 | 0.33 |
| Pass-Aggr | - | - |
| NOS | 0.01 | 0.04 |

*Kappa statistics were not calculated for PD categories with less than 5 cases.*

A similar trend was also noted for the antisocial (19 vs 27) group.

To summarise, in general, poor agreement was found regarding the presence/ absence of PD, when diagnosis was obtained from case-records ratings and 'lifetime' assessment at follow-up. Significant diagnostic disagreement was observed for DSM-III-R categories with the exception of borderline and antisocial PD. These results demonstrate considerable discrepancy in PD diagnoses obtained from case-records ratings and from personal interview ('past' assessment) with patients at follow-up.

## 8.6. DISCUSSION

This study provided an opportunity to examine, albeit in a retrospective manner, diagnostic change, in a cohort of personality disorder patients who were followed-up after a mean period of 13 years.

Results confirmed the persistent and chronic nature of personality disorders which remain relatively stable over time in the majority of patients. Nonetheless, gradually with increasing age, some PDs were shown to become less pronounced over time. Of the 88 probands who were personally interviewed, and who had received a clinical diagnosis of PD at index, just over one-third of these cases no longer satisfied criteria for any DSM-III-R PD diagnosis at follow-up. The remaining two-thirds of probands continued to have a PD diagnosis, of whom over half reported some improvement but still qualified for some PD diagnosis at follow-up. Likewise, one-fourth of the 63 probands from narrowly-defined cohort (ie. DSM-III-R PD cases at index) were not assigned any PD diagnosis at follow-up. Furthermore, not only do patients fulfil fewer criteria for certain disorders than they did when they were younger, but also receive fewer multiple diagnoses at follow-up. In other words, patients present a wider spectrum of personality problems in their early adulthood, compared with a narrower range of personality-related problems as they approach their middle age. Additionally, PD patients have been reported to receive other diagnoses as they reach middle age, eg. an apparent increase in depression concomitant with a decrease in acting out behaviour among older borderline PD patients reported by Snyder and his co-workers (1982).

Turning to specific PD categories, consistent with previous reports by Tyrer & Seivewright (1988), McGlashan (1986), and Stone (1992), it was shown that certain PD categories become less pronounced over time and improve with age, whereas other PD categories show little or no change over time. Significant improvement was noted particularly in patients with DSM-III-R antisocial and histrionic PD, and to a lesser extent, among patients with borderline and avoidant PD. In contrast, little or no change was reported by probands with Cluster A PDs (paranoid, schizoid, schizotypal), narcissistic, obsessive-compulsive, passive-aggressive, dependent and sadistic PD.

A cautionary note regarding the interpretation of findings related to variable diagnostic change among different PD categories. In this study, PD diagnoses were assigned for two time periods: 'past' and 'current' (at follow-up) based on information provided by the patient during the interview. Diagnostic change was measured by the reduction in the total number of criteria met by patients for each PD category from 'past' to 'current' assessment, based on personal interview at follow-up. Undoubtedly, such retrospective reporting by the patients has severe limitations, although efforts were made to incorporate evidence from multiple sources such as previous hospital records, close informants, family doctor, etc. Therefore only crude observations could be made regarding the trends in diagnostic change for each PD category.

It is interesting to note that patients with dependent PD show minimal change with age. These findings confirm Tyrer & Seivewright's (1988) proposal that there are differences in the outcome of different PDs, and that the anxious group of PDs includes some that may show improvement with age, but others that remain stable. They also lend support to previous long-term outcome studies on specific PD categories that suggest improved outcome for antisocial and borderline patients but minimal change among schizotypal patients (McGlashan,1986, Stone,1990, Paris et al,1987). In the present study, however, the diagnostic change among borderline patients, at follow-up, was not as impressive compared to other categories from the "flamboyant" group such as the antisocial and histrionic group. No doubt the most comprehensive outcome in PD patients should take into account a range of multiple criteria, instead of a single dimension such as diagnostic change (Carpenter et al,1981; McGlashan, 1984).

Finally, the study showed that the change of PD diagnosis from positive to negative over time was influenced by the length of follow-up. Diagnostic change is more likely to occur over longer period of ten years or more, and rarely occurs during the first five years of their discharge from hospital at index contact. These results are consistent with previous studies on borderline PD (McGlashan,1986; Stone,1991) which suggest that outcome functioning for the borderline PD patients, especially in the realms of symptomatic and instrumental functioning, varies as a function of time and age. It is further suggested that the relationship of clinical state with time is not simple, nor linear,

as advancing age apparently brings a reappearance of symptoms during difficulties. The present study has gone beyond borderline PD, and demonstrated a similar trend for the broader group of all PDs included in DSM-III-R. It is likely that much of the change in diagnosis is accounted by only few PD categories such as histrionic, impulsive, antisocial, etc. that have been shown to change significantly over time. Unfortunately, the present sample was not large enough to repeat time-effect analyses on individual PD categories.

Much of the discrepancy in PD diagnoses assigned by clinicians and researchers at index, could be attributed to having to rely on hospital casenotes. The rater is restricted by information available in the casenotes, which in turn, may be influenced by several factors, including the degree of training the clinician may have received in diagnosing PDs in patients, clear description of patients' specific behaviours/attitudes that may have influenced their diagnostic judgement, duration of contact a patient may have had with the hospital/clinician, details of other axis I conditions (past and present), etc.

In the present study, a proportion of patients (25%) received no DSM-III-R PD diagnosis at index. Their casenotes had insufficient information to rate all criteria. Some patients were seen only once, and nearly one-third of the patients were seen for a brief period (less than 1 month). Others were still too young (18-20 yrs of age), thus failing to satisfy the duration requirement. Part of this problem was resolved when some of these patients were interviewed at follow-up and subjected to detailed assessment.

Focusing attention on the subgroup of patients who were subsequently interviewed at follow-up, poor agreement was found regarding the presence/ absence of PD, when comparison was made between diagnosis obtained from case-records and 'past' PD assessment at follow-up. The diagnostic disagreement applied to most DSM-III-R categories with the exception of borderline, paranoid, and antisocial PD. More cases were diagnosed as DSM-III-R paranoid, borderline, passive-aggressive and antisocial based on personal interview at follow-up. Perhaps patients were more willing to acknowledge their fears in hindsight, without having to worry about its implications regarding management of their case and admission/discharge from hospital. In contrast,

fewer cases fulfilled criteria for 'lifetime-ever' diagnosis of DSM-III-R dependent PD. Either these persons under-reported dependency traits in retrospect, or, their clinicians' may have described behavioural characteristics at index contact which were influenced perhaps by concurrent axis I conditions such as depression and/or mixed anxious state. Unfortunately, this issue cannot be clarified with the present data set. In general, the results demonstrate the severe limitations of using case-records' ratings as the sole method of sample selection in research investigations, and makes a strong case for the use of multiple sources, including patient interviews, in diagnosing PDs among patients.

# CHAPTER 9. MORTALITY DURING FOLLOW-UP

## 9.1. Background

The overall death rate among personality disorder patients is approximately twice that expected for the same age groups in the general population (Martin et al,1985; Black et al,1985; Winokur & Black,1987; Zilber et al,1989; Amaddeo et al,1995). The excess mortality is largely explained by unnatural deaths (suicides or accidents) among patients, although a recent study based on a psychiatric case-register also reported excess mortality by natural causes among PD patients, particularly by infectious diseases and cancer (Zilber et al, 1989). Among specific PDs, borderline PD is reported to be a common diagnosis in suicide victims (Martunnen et al, 1991; Runeson & Beskow, 1991), suicide attempters (Casey, 1989) and self-mutilators (Simeon et al, 1992). Recurrent suicidal or self-destructive behaviour, when present, is shown to have the highest positive predictive power for the diagnosis of BPD (Nurnberg et al, 1991). Coupled with other criteria such as affective instability, impulsiveness and aggressiveness, a borderline patient is highly inclined to suicidality. Another PD diagnosis reported to be linked to "a violent end" is antisocial PD although reliable figures relating specifically to ASPD are lacking. Robins (1966) indicated excess mortality in this group due to homicide, accidents, and physical complications of alcohol or substance abuse. A smaller study by Yaeger & Lewis (1990) of incarcerated delinquents showed that 7 out of 118 cases met a violent end within five years, yielding a 76 fold increased risk of having a violent death as compared to a similar age-, sexed match group from the general population.

The question remains whether there are other diagnostic subgroups, besides BPD, within the personality disordered patient population who are at especially high risk for early 'violent' death. To my knowledge, as yet, no study has reported patterns of mortality in the full range of DSM-III-R PDs. The present chapter delineates further the relationship between mortality and various PD diagnoses, after adjusting for the presence of any co-occurring axis I and axis II disorders in the data analyses.

## 9.2. RESULTS

### 9.2.1. Mortality among Probands and Co-twins at Follow-up

One of the primary objectives of the study was to compare the rate and pattern of mortality in a group of personality disorder twin probands, and their co-twins. Of particular interest was: (a) whether patients with PD diagnosis had an increased risk of early death compared to their co-twins? and (b) whether the excess mortality among PD group, if any, was explained by death due to natural or unnatural causes, compared to their co-twins? Results will be presented separately for the broadly-defined (clinical PD diagnosis at index) and narrowly-defined (DSM-III-R PD at index) proband groups respectively.

Broadly-defined cohort: Table 9.1 shows the distribution of probands and co-twins by total mortality, and by cause of death. Twenty (10.4%) of the 192 probands were registered as dead at follow-up compared with 6 (3.6%) in the co-twin group. These figures were re-examined by cause of death which was broadly divided into three categories: death by natural causes (physical illnesses), unnatural death by suicide, and accidental death/open verdict. Excess mortality among probands was found to be accounted by a disproportionately large number of suicides, rather than death by natural causes or accidents. Two-thirds of the total deaths (14 out of 20) among probands were by suicide, the remainder were death by natural causes and one case of open verdict. In contrast, an equal number of deaths by natural and unnatural causes was observed among the co-twins.

Table 9.2 presents the demographic characteristics and cause of death of each proband in the broadly defined cohort. The most common method used in successful suicide was by taking an overdose of psychotropic drugs or analgesics, observed in 10 of 14 cases. Other methods, though rare, included hanging, drowning, setting fire to oneself and suffocating in a plastic bag. An open verdict was rendered in one case reported missing for over 15 years, and presumed dead by patient's family. The male-female distribution was even for total mortality (10 men and 10 women), but varied slightly when considered by cause of death; 'natural' deaths occurred more often in men than women (4:1). None of the sex differences were statistically significant. The mean age at death

*Table 9.1. Mortality among the broadly- and narrowly-defined cohort and their co-twins*

| **Mortality Status at FU** | **Broadly-defined group** | | **Narrowly-defined group** | |
|---|---|---|---|---|
| | **Probands (N=197)** | **Co-twins (N=163)** | **Probands (N=145)** | **Co-twins (N=122)** |
| Alive | 172 (87.3%) | 150 (90.2%) | 125(86.2%) | 114 (93.4%) |
| Total Dead | 20 (10.1%) | 6 (3.6%) | 17 (11.8%) | 4 (3.3%) |
| No Information | 5 (2.5%) | 7(4.3%) | 3 (2.0%) | 4 (3.3%) |
| **Sample distribution by Cause of Death** | | | | |
| Natural causes (diseases) | 5 (2.5%) | 3 (1.8%) | 3 (2.1%) | 1 (0.8%) |
| Unnatural causes (suicides) | 14 (7.1%) | 2 (1.2%) | 13 (9.2%) | 2 (1.7%) |
| Unnatural causes (accidents/open verdict) | 1 (0.5%) | 1 (0.6%) | 1 (0.7%) | 1 (0.8%) |

*Table 9.2. Demographic characteristics and causes of death in the broadly-defined cohort*

| Proband | Sex | Age | Cause of Death | No. of DSM-III-R PD |
|---|---|---|---|---|
| 1 | F | 24 | OD of Imipramine | 3 |
| 2 | M | 27 | Hanging | - |
| 3 | M | 24 | OD of Amitriptyline & Flurazepam | 3 |
| 4 | F | 36 | Overdose of Valium | 3 |
| 5 | M | 29 | Severe burns. Poured petrol and set himself alight. | 3 |
| 6 | F | 18 | OD of Aspirin & Amitriptyline | 3 |
| 7 | F | 44 | Suffocation in a plastic bag. Killed herself. | 4 |
| 8 | M | 38 | Overdose. Mandrax poisoning. | 3 |
| 9 | M | 24 | Drowning | 4 |
| 10 | F | 48 | Suicide | 4 |
| 11 | M | 32 | OD of Tuinal | 2 |
| 12 | M | 50 | OD of Aspirin | 3 |
| 13 | F | 21 | Dibenzepin poisoning. She killed herself. | 5 |
| 14 | M | 38 | Suicide by overdose | 1 |
| 15 | F | 28 | Presumed dead. Reported missing for 15 yrs. | 4 |
| 16 | M | 49 | Myocardial infarction, Coronary atheroma | - |
| 17 | M | 45 | Respiratory arrest, cerebral anoxia, circulatory arrest | 1 |
| 18 | M | 54 | Myocardial infarct | - |
| 19 | M | 58 | Natural causes | 3 |
| 20 | F | 73 | Myocardial infarct, coronary thrombosis | 2 |

Mean age at death for the total proband group $38.0 \pm 14.4$ yrs

*Table 9.3. Demographic characteristics and causes of death in the co-twin group.*

| Cotw | Sex | Age | Cause of Death | Any Psych. History | Hosp Adm |
|---|---|---|---|---|---|
| 1 | F | 35 | Drowning | Maj Aff.Dis | Yes |
| 2 | M | 50 | Natural causes - alcohol related | Maj Aff.Dis Alcoholism | Yes |
| 3 | M | 57 | Myocardial infarct | GAD, depression | Yes |
| 4 | M | 60 | Cerebral lesions, neurological complix | N/K | No |
| 5 | M | 59 | Killed. Struck on the head. | Gay | N/K |

Mean age at death for the cotwin group 48.0$\pm$16.4 yrs

was 38.0$\pm$14.4 yrs for probands but significant age difference was found by cause of death. The 'suicide' group was significantly younger (32.3$\pm$10.2 yrs) than those who died of natural causes (mean age 55.8$\pm$10.8 yrs, $t=4.35$, $df=17$, $p<.001$). Likewise, Table 9.3 shows the sex, age, cause of death and presence of psychiatric history among co-twins. Although the co-twins seemed older at death (mean age 48.0$\pm$16.4 yrs) than the probands, the age difference was not statistically different. It was striking, however, to find that a considerable proportion of co-twins (66.7%) who died also had a positive history of psychiatric disorders. Unfortunately, no details were available on two cases other than restricted information from their surviving co-twins. Of the two cases, one was reported to have suffered from an unspecified neurological condition from infancy but was said to have coped well, ie. was successfully employed, happily married with children and did not receive any psychiatric treatment, according to his co-twin. The other case had three previous convictions for sexual offenses, was known to be bisexual and had worked as a male prostitute in the past. It is plausible that these two cases may well have had some psychopathology, but because of their demise, systematic psychiatric

evaluation at follow-up could not be undertaken.

Narrowly-defined cohort: As in the case of broadly-defined cohort, an excess of mortality, particularly death by suicide, was observed in PD patients from the narrowly-defined cohort compared to their cotwins (Table 9.1). 11.8% (N=17) of the 145 probands were reported dead at follow-up compared to 3.3% (N=4) of their co-twins. Three-fourth of the total deaths (13 out of 17) among probands were by suicide, in contrast to one-third (1 out of 3) of total deaths among the cotwins (ie. after excluding double probands from the cotwin group). Virtually all the co-twins who were reported dead at follow-up had a previous psychiatric history of either major affective disorder or alcohol dependence, and the cotwin group was approximately ten years older at death than the proband group (mean age at death 48 yrs vs 38 yrs).

### 9.2.2. Within-Pair Twin Comparison (Broadly-defined cohort)

Survival outcome (alive or dead) was examined in 154 twin pairs. The proportion of pairs where the proband died during follow-up was 9.74%; in contrast, the proportion of pairs where the co-twin died during follow-up was 3.24%. The best estimate based on the difference in proportion was 6.5% with 95% CI of 0.9-12.0, which failed to reach statistical significance ($p<0.48$). Likewise, when the same data was re-analyzed for suicide alone, a greater proportion of pairs were found where the proband committed suicide than where the cotwin committed suicide (7.14% vs 1.29%, best estimate= 5.85, 95% CI 0.7-8.0), but the difference was not statistically significant ($p<.86$). Thus, although any excess mortality among the probands could be attributed to the increased risk of suicide in this group, it was not possible to demonstrate, with the restricted number of affected cases, that PD probands were at greater risk of death by suicide compared to their co-twins in this study.

### 8.2.3. Concordance for Mortality by Zygosity (Broadly-defined cohort)

Of the 21 twin pairs where at least one member had died during the follow-up period, 6 were monozygotic (MZ), and 13 were dizygotic (DZ, same-sex & opposite-sex

combined) pairs. Zygosity was uncertain in the remaining 2 pairs of twins. One of 6 MZ twin pairs was concordant for death (by any cause) compared to none of 13 DZ twin pairs (20% vs 0%). Both members of the concordant pair died of cardiovascular disease, aged in their mid- to late 50s, within 5 years of each other. Both were treated at the Maudsley Hospital for neurotic illnesses, but only the proband received a formal diagnosis of personality disorder, secondary to anxiety disorder. Concordance rates were not calculated because of the small number of affected cases, which would generate estimates that were misleading and unreliable. Moreover, bearing in mind that the study sample was ascertained for diagnosis of personality disorder rather than mortality, it would be misleading to use the concordant rates for estimates of heritability and environmental factors in premature death.

Similarly, when the data was examined specifically for suicide, in all there were 13 twin pairs where at least one member had committed suicide during the follow-up period. However, no concordance for suicide was found in the 5 MZ and 8 DZ twin pairs. All the 13 suicide victims, whether probands or cotwins, had received treatment for psychiatric problems during their lifetime. Thus, no evidence was found to link suicide with genetic factors in this twin sample, but the presence of a psychiatric history seemed to be related to suicide.

Next, more detailed data analyses were carried out on the proband sample in an attempt to examine the specific relationship between patient characteristics (clinical and demographic) and survival at follow-up. Survival analyses was performed in order to identify risk factors that were associated with suicide.

### 9.2.4. Total Mortality in Personality Disordered Patients (broadly-defined cohort) - Kaplan-Meier Survival Function

Figure 9.1 shows the Kaplan-Meier survival curve for PD patients estimated to survive by age at follow-up. At age 20, around 99% of the patients were estimated to be alive; by age 30, the proportion of patients estimated to be alive had reduced to approximately 95%; by age 40, the estimate had further dropped to about 93%. By age 50,

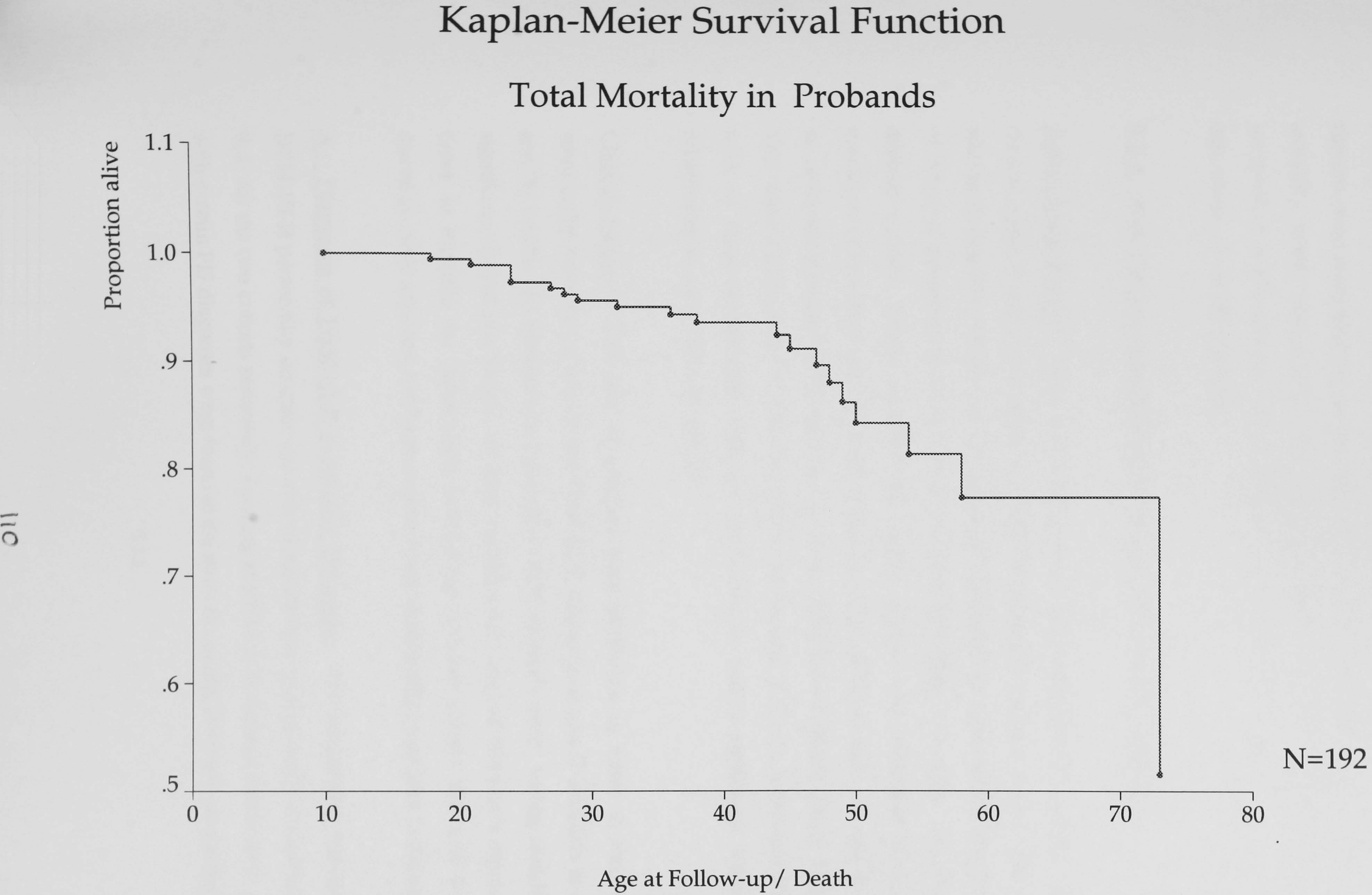


FIG 9.1 Kaplan-Meier survival curve of the proportion of PD patients estimated to survive by age at follow-up

approximately 85% of the patients were estimated to be still alive at follow-up, and the figure dropped further to approximately 78% by age 60. Estimates beyond age 60 are unreliable because of the few cases in the 60+ age category. The plot indicates that patients were more likely to die between ages 30 and 60 yrs. The curve represents total mortality where both natural and unnatural deaths are combined for all patients, irrespective of PD subtypes. The estimates would inevitably change if based on suicide data alone, or on PD subtypes.

### 9.2.5. Risk Factors Associated with Suicide in Personality Disorders

Demographic Factors: The relationship between four demographic variables (gender, marital status at index, education, and inpatient/outpatient status at index) with risk of suicide among PD patients was examined by Kaplan-Meier survival test, the summary of which is presented in Table 9.4. In probands belonging to broadly- and narrowly-defined cohorts, results revealed that neither gender, nor education were strong predictors of increased risk of suicide. But being single at index, and receiving treatment as an inpatient seemed to be associated with increased risk of suicide during follow-up. Yet, when the presence of PDs was taken into account in Cox's regression analysis, none of these demographic variables was found to bear a significant independent relationship to early death by suicide.

Clinical Factors: Two sets of analyses were performed in order to examine the relationship between (a) suicide and DSM-III-R diagnosis of axis II disorders at index, and (b) suicide and lifetime axis I disorders (RDC defined). Next, having identified the significant clinical risk factors, all these variables were entered into Cox's regression in order to examine the independent relationship between suicide and axis I and II disorders, after adjusting for the presence of other confounding variables in the equation.

A. Diagnoses of DSM-III-R Personality Disorders: The relationship between each DSM-III-R personality disorder and risk of suicide was systematically examined (Table 9.5) for the two cohorts separately. Looking at the broadly defined cohort first, patients with certain PD diagnoses were found to die more frequently from suicide during follow-

*Table 9.4. Summary of Kaplan-Meier log rank analyses to examine the relationship between demographic characteristics and suicide in subjects from the broadly- and narrowly-defined (in brackets) cohort during the follow-up period.*

| **Demographic Characteristics** | **Log Rank Statistics** | **Sig** |
|---|---|---|
| Gender | | |
| Men | 0.14 | 0.71 |
| Women | (0.64) | (0.42) |
| Marital Status | | |
| Single | 4.00 | 0.04 |
| Ever married | (6.16) | (0.01) |
| Education | | |
| < 11 yrs schooling | 1.15 | 0.28 |
| Higher education | (3.26) | (0.07) |
| Patient status | | |
| Outpatient | 4.32 | 0.04 |
| Inpatient | (3.94) | (0.05) |

up than patients without these diagnoses. They included diagnoses of DSM-III-R borderline ($p=0.0002$), schizoid ($p=0.005$), schizotypal ($p=0.04$) and obsessive-compulsive PD ($p=0.05$). It was plausible that some of the PD categories identified as 'at high risk' were not truly associated with suicide, instead they were confounding factors because of extensive co-occurrence of PDs in the sample. Thus, all four DSM-III-R PDs (borderline, schizoid, schizotypal and obsessive-compulsive) were entered into Cox's regression equation, the results of which are summarised in Table 9.6. The final model indicated that only the diagnosis of borderline and schizoid PD were significantly related to suicide during follow-up, but not schizotypal or obsessive-compulsive PD. Considerable overlap between schizoid and schizotypal, and schizotypal and obsessive-compulsive PD may have accounted for the initial significant association with suicide, which disappears after adjusting for the presence of confounding variables in Cox's regression analyses. The results indicate an odds ratio of 6.78 with 95% CI of 2.2 to 21.0 for the diagnosis of borderline PD, and odds ratio of 5.24 with 95% CI of 1.4 to 19.6 for the diagnosis of schizoid PD to co-occur with suicide. Furthermore, having multiple PD diagnoses increased the risk of suicide at follow-up over having no

*Table 9.5. Summary of Kaplan-Meier log rank analyses to examine the relationship between DSM-III-R PDs and suicide in subjects from broadly- and narrowly-defined cohort.*

| **DSM-III-R PD** | **Broadly-defined cohort Log rank (Kaplan Meier) Sig** | | **Narrowly-defined cohort Log rank (Kaplan Meier) Sig** | |
|---|---|---|---|---|
| Paranoid (N=14) | 0.07 | .78 | 0.32 | .57 |
| **Schizotypal (N=10)** | **4.27** | **.04** | 2.80 | .09 |
| **Schizoid (N=11)** | **7.75** | **.005** | **5.03** | **.02** |
| Antisocial (N=49) | 0.16 | .69 | 0.04 | .85 |
| **Borderline (N=47)** | **14.32** | **.0002** | **9.76** | **.002** |
| Histrionic (N=37) | 2.49 | .11 | 0.95 | .33 |
| Narcissistic (N=3) | 0.18 | .66 | 0.23 | .63 |
| Avoidant (N=45) | 1.59 | .20 | 0.43 | .51 |
| Dependent (N=20) | 2.33 | .12 | 1.20 | .27 |
| **Obsessive-compulsive (N=6)** | **3.85** | **.05** | 2.32 | .13 |
| Passive-aggressive (N=1) | 0.07 | .78 | 0.09 | .76 |
| Self-defeating (N=3) | 0.23 | .63 | 0.30 | .58 |
| Sadistic (N=5) | 2.73 | .09 | 1.87 | .17 |
| NOS (N=62) | 0.97 | .32 | 0.01 | .91 |
| **Multiple PD Diagnoses (range 0 to 6)** | **27.44 (df=6)** | **.0001** | **19.57 (df=5)** | **.001** |

*Table 9.6. Cox's regression analysis to examine the relationship between suicide and DSM-III-R PDs (schizoid, schizotypal, borderline and obsessive-compulsive PD) after adjusting for the presence of others in the broadly-defined cohort.*

**Summary of the final model**

| **Variables included in the final model** | | | | | | |
|---|---|---|---|---|---|---|
| DSM PD | B | SE | Wald | Sig | B(Exp) | 95% CI |
| Bord | 1.91 | 0.57 | 10.98 | .001 | 6.78 | 2.2 - 21.0 |
| Szd | 1.66 | 0.67 | 6.02 | .01 | 5.24 | 1.4 - 19.6 |
| **Variables Not in the Equation** | | | | | | |
| Variable | Score | df | Sig | | | |
| Ocpd | 2.907 | 1 | .09 | | | |
| Stpd | 0.301 | 1 | .58 | | | |

*Table 9.7. Cox's regression analysis to examine the relationship between suicide and DSM-III-R personality disorders (borderline and schizoid PD) after adjusting for the presence of each other in the narrowly-defined cohort.*

**Summary of the final model**

| **Variables included in the final model** | | | | | | |
|---|---|---|---|---|---|---|
| DSM PD | B | SE | Wald | Sig | B(Exp) | 95% CI |
| Bord | 1.81 | 0.62 | 8.53 | .003 | 6.11 | 1.8 - 20.6 |
| Szd | 1.57 | 0.69 | 5.19 | .02 | 4.82 | 1.2 - 18.6 |

diagnosis or single PD diagnosis ($p=0.0001$). In other words, patients with more severe psychopathology are more likely to have an increased risk of suicide than those with fewer PD diagnoses. These findings were successfully replicated for patients comprising the narrowly-defined cohort (Tables 9.7).

In brief, results on the relationship between DSM-III-R PDs and risk of suicide indicate that having multiple PD diagnoses, particularly diagnosis of borderline and/or schizoid PD increases the risk of suicide during the follow-up period.

B. Lifetime Axis I disorders: The relationship between lifetime axis I disorders (RDC defined) and suicide in patients during the follow-up period was systematically examined using Kaplan-Meier log rank test. Axis I disorders were divided into 13 categories shown in Table 9.8. One additional clinical feature was included in the analyses as possible risk factor namely, previous history of repeated overdoses. Table 9.8 presents a summary of the results for the two proband cohorts. A history of major depressive disorder ($p=0.003$) and alcohol abuse was found to increase the likelihood of death by suicide among patients. Also, the presence of previous history of taking repeated overdoses ($p=0.004$) was found to be associated with subsequent death by suicide.

To summarise, survival analyses on the relationship of suicide to axis I disorders in patients during follow-up suggested that comorbid major depression and, to a lesser degree, alcohol abuse, along with a history of taking repeated overdoses were the three clinical characteristics commonly associated with increased risk of suicide among PD patients.

C. Relationship between Suicide and Axis I and Axis II Disorders Combined: Cox's Regression Analyses Findings: The majority of the patients in the series had both axis I and axis II disorders. Therefore, in the final set of analyses, all significant clinical variables were entered into Cox's regression analyses to examine their independent relationship with suicide, after adjusting for the presence of others. Table 9.9 presents the results of the analysis in which significant DSM-III-R PDs and axis I disorders (presence of DSM-III-R schizoid PD, borderline PD, history of major depression and

taking repeated overdoses) were simultaneously entered into the equation. The final model included the presence of a history of major depression (OR= 8.57, CI 1.1-68.3), diagnosis of schizoid (OR=5.1, CI 1.3-19.6) and borderline PD (OR= 3.23, CI 1.0-10.6), and excluded history of taking repeated overdoses (p=0.23) when examining the relationship between suicide and axis I and II disorders. Therefore, after adjusting for confounding effect, the clinical factors identified as predicting increased risk of suicide were history of major depression and a diagnosis of DSM-III-R schizoid PD or borderline PD. The presence of history of taking repeated overdoses no longer appeared to be a significant risk factor for suicide.

A repeat of the above analyses using data based on narrowly defined cohort indicated that only borderline PD diagnosis (OR=5.8, CI 1.7-20.3) coupled with a history of alcohol abuse significantly predicted an increased suicide risk at follow-up (Table 9.10). In patients strictly defined according to DSM-III-R PDs at index, neither the presence of schizoid PD, nor history of major depression or taking repeated overdoses were found to be strong predictors of subsequent suicide during follow-up, after adjusting for confounding variables in data analyses.

## 9.3. DISCUSSION

The present study used a twin sample to demonstrate a trend that patients with personality disorders were likely to die earlier than their co-twins. Ten percent of patients from the broadly defined cohort had died during the follow-up compared to 3.6% of deaths among the co-twins. The excessive mortality among PD patients was due chiefly to suicides. Slightly wider difference in mortality rate was observed among probands and their co-twins from the narrowly defined cohort, especially for suicides, where 9.2% of probands killed themselves during the follow-up compared to just 1.7% of co-twins. In general, a suicide rate of 7.1% in the present series was consistent with the rates (between 8-9%) reported by Paris (1990) and Stone (1990) in their long-term follow-up of borderline patients. No difference was found, however, between the two groups for death by natural causes or by accidents. The results on excess 'total mortality' and suicides are consistent with previous studies based on hospital samples

*Table 9.8. Summary of Kaplan-Meier log rank analyses to examine the relationship between lifetime axis I disorders and suicide in subjects from the broadly- and narrowly-defined (in brackets) cohort during the follow-up period.*

| **Axis I disorders** | **Log rank statistics (Kaplan Meier)** | **Sig** |
|---|---|---|
| Functional psychoses N=6 (N=4) | 0.41 (0.46) | .52 (.50) |
| Bipolar N=7 (N=4) | 0.52 (0.37) | .47 (.54) |
| Hypomania N=19 (N=15) | 0.83 (1.24) | .36 (.26) |
| **Major Depression N=81 (N=64)** | **8.85 (6.57)** | **.003 (.01)** |
| Minor Depression N=149 (N=117) | 0.29 (1.24) | .59 (.27) |
| GAD N=80 (N=60) | 0.04 (0.11) | .83 (.74) |
| Panic N=27 (N=21) | 0.78 (0.68) | .37 (.41) |
| Phobia N=27 (N=20) | 2.55 (2.41) | .11 (.12) |
| Alcohol N=66 **(N=59)** | 3.13 **(4.68)** | .08 **(.03)** |
| Drugs N=48 (N=41) | 1.61 (1.49) | .20 (.22) |
| OCD N=9 (N=7) | 0.00 (0.00) | .96 (.99) |
| Somatization Dis N=10 (N=9) | 0.03 (0.00) | .86 (.96) |
| Eating Disorders N=12 (N=12) | 0.83 (1.10) | .36 (.29) |
| **Hx of taking overdose N=107 (N=94)** | **8.26 (6.92)** | **.004 (.008)** |

*Table 9.9. Cox's regression analysis to examine the relationship between suicide and clinical risk factors (presence of DSM-III-R schizoid PD, borderline PD, history of major depressive disorder, and taking overdoses) in subjects from the broadly-defined cohort, after adjusting for comorbid disorders.*

**Summary of the final model**

| **Variables included in the final model** | | | | | | |
|---|---|---|---|---|---|---|
| Variables | B | SE | Wald | Sig | B(Exp) | 95% CI |
| Maj Depr | 2.15 | 1.06 | 4.12 | .04 | 4.19 | 1.1 - 16.5 |
| Bord PD | 1.17 | 0.60 | 3.78 | .05 | 3.23 | 1.0 - 10.6 |
| Szd PD | 1.62 | 0.69 | 5.54 | .02 | 5.07 | 1.3 - 19.6 |
| **Variables Not in the Equation** | | | | | | |
| Variable | Score | df | Sig | | | |
| Hx OD | 1.44 | 1 | .23 | | | |

*Table 9.10. Cox's regression analysis to examine the relationship between suicide and clinical risk factors (presence of DSM-III-R schizoid PD, borderline PD, history of major depressive disorder, alcohol abuse and taking overdoses) in subjects from the narrowly-defined cohort, after adjusting for other variables.*

**Summary of the final model**

| **Variables included in the final model** | | | | | | |
|---|---|---|---|---|---|---|
| Variables | B | SE | Wald | Sig | B(Exp) | 95% CI |
| Bord PD | 1.76 | 0.64 | 7.58 | .006 | 5.81 | 1.7 - 20.3 |
| Alcohol | -2.38 | 1.05 | 5.11 | .02 | 0.09 | 0.01 - 0.73 |
| **Variables Not in the Equation** | | | | | | |
| Variable | Score | df | Sig | | | |
| Szd PD | 3.58 | 1 | .06 | | | |
| Hx OD | 3.06 | 1 | .08 | | | |
| Maj Depr | 2.89 | 1 | .09 | | | |

which report high mortality rates for patients with PD diagnosis (Black et al,1985; Zilber et al,1989). But unlike previous studies, no excess of accidental deaths, nor of death by infectious diseases was found in the present sample, perhaps because the number of deceased patients was small.

Close examination of the co-twin data by cause of death revealed that nearly two-third of the cases who died (by natural and unnatural death) also had a psychiatric history, mainly affective disorder or alcohol dependence. In fact, three of the six co-twins who were dead had been treated at the Maudsley Hospital as inpatients, one was a double proband in the present series. Although over half the co-twins were known to be completely well, almost all those who died during the follow-up had been psychiatrically ill, especially if they committed suicide. It is of interest to note that there were no twin pairs in which suicidal behaviour had occurred without associated psychiatric disorder. Thus, it appears that psychiatric morbidity in the co-twins may have increased the risk of premature death, particularly suicide, in this group. These findings correspond to previous twin reports that suggest that genetic transmission of psychiatric disorders is a possible confounding factor in the examination of twin data in relation to suicide (Roy, 1986; Roy et al,1991). MZ and DZ concordance rates for total mortality, and suicide

in specific, were not calculated in the present study because of small sample size. Although reports by Kendler (1986) and Roy et al (1991), based on twin registry data, have indicated a significant difference between MZ and DZ twin pairs, in favour of a weak but significant genetic effect on suicide, both the investigations suffer from serious limitations, thereby leaving open the question of whether there may be an independent genetic component for suicide. To date, there is no clear evidence to suggest that mortality (disease-related & from trauma) in the twins I studied resulted largely from genetic factors.

No significant gender effect was found in the present study for both 'total mortality' and suicide. Although a trend was noted for more men to have died by natural causes than women (4:1), and conversely, more women to have committed suicide, these differences were not statistically significant. These results are in broad agreement with previous

studies based on large patient populations (Black et al,1985; Martin et al,1985).

Turning to the relationship between specific PD categories and suicide, and after adjusting for other co-existing axis I and II disorders, it was shown that among DSM-IIIR PDs, the diagnoses of schizoid and/or borderline PDs, were most likely to be associated with an outcome of suicide among patients during follow-up. We already know that BPD is common in suicide victims (Runeson & Beskow, 1991; Kjelsberg et al,1991) but none of the previous studies had adjusted for the presence of other axis II disorders in their analyses. By doing so in the present study, I have reconfirmed the link between a diagnosis of DSM-III-R borderline PD and suicide. The finding that schizoid PD too is associated with suicide has not previously been reported. But unlike the borderline patients in the present series who primarily died of overdosing, 3 of the 4 deceased patients with schizoid PD died of other causes such as severe burns to self, drowning and coronary thrombosis. Only one patient with co-occurring schizoid and borderline PD killed himself with an overdose. It appears that history of taking repeated overdoses was a strong risk factor among the borderline group of patients, but not among the schizoid PD group. These results may have implications regarding the clinical management of PD patients and need to be replicated in a larger sample.

Survival estimates based on the presence/absence of lifetime axis I disorders in patients indicated that previous history of major depressive disorder and, possibly history of alcohol abuse, were the only psychiatric disorders shown to increase the risk of suicide in patients during follow-up. Unlike previous studies that report high mortality in patients with substance abuse/dependence (Stone,1990), in this study, patients with a history of drug abuse/ dependence were found to have similar survival estimates as those without drug abuse. These negative findings could be attributed to the selection of the study sample where all cases with additional diagnosis of substance dependence were excluded, especially if the patient was receiving concomitant treatment for this at index contact. The decision to exclude such cases was taken because it was very difficult to differentiate among these patients between enduring personality traits that were apparently maladaptive since late adolescence or early adulthood, and from personality change that was a consequence of substance addiction. Reliance on clinical case-records

for initial sample ascertainment made it almost impossible to make such judgments, therefore, it was considered best to exclude this subgroup at the start of the investigation.

Ideally, had I presented the mortality data in terms of standardized mortality ratio (SMR), I could have made crude comparisons with previous mortality studies on different groups of psychiatric patients. However, I have not reported my findings in SMR terms for the following reasons. Firstly, difficulty in obtaining reliable summarised national data on age-sex specific mortality rates encompassing the wide study period from late 1960s to late 1980s. Moreover, unlike recent mortality studies (Zilber et al,1989; Amaddeo et a,1995) involving large patient population from which adequate age-sex adjusted mortality rates could be generated, my study sample was relatively small to permit calculation of reliable standard rates, without resorting to national mortality statistics. These national rates would serve as standard rates which are then applied to the PD sample to calculate the number of deaths that would have been expected in the patient population if the mortality experience was the same in the two populations. Consultation with two independent statisticians led me to restrict my data analyses to the present study sample.

To summarise, a trend was noted for twin probands with personality disorder diagnosis to be more at risk of early death during follow-up compared with their co-twins, particularly death by suicide. Two-third of all deaths in PD patients were explained by suicide. Of the 14 DSM-III-R PD categories examined, significantly fewer patients with diagnosis of borderline and schizoid PD survived compared to patients without these diagnoses, at follow-up. Among axis I disorders, history of major depression, alcohol abuse and taking repeated overdoses was found to increase suicide risk in patients. After adjusting for the presence of both axis I and II disorders in analyses, mainly the presence of diagnoses of borderline PD was found to reduce the survival rate in patients during follow-up.

# CHAPTER 10. PSYCHOSOCIAL FUNCTIONING IN PROBANDS AND CO-TWINS DURING THE FOLLOW-UP

## 10.1. Background

The evaluation of long-term outcome in patients with personality disorders requires the assessment of a wide range of behaviours, including symptomatology, its management, and the subsequent effect on an individual's work, family and social life. In the present investigation, outcome was assessed multi-dimensionally over the total follow-up period, using a modified version of McGlashan's Total Follow-up Period Outcome Scale (McGlashan, 1984). This scale has been described in detail in Chapter 4 and was previously used in two independent investigations and shown to have good reliability (McGlashan,1986; Links et al,1990). For convenience, psychosocial outcome is presented as global functioning during the entire follow-up period. Ratings on global functioning reflect a composite of scores on seven outcome measures including the overall severity ratings of personality disorder traits, further treatment since index discharge, employment, social and family relationships, change in marital status at follow-up, co-occurring lifetime axis I disorders, and living situation at follow-up. Outcome is presented for three cohorts namely, broadly defined cohort of probands, narrowly defined cohort of probands, and the co-twin group.

## 10.2. RESULTS - Global Functioning in subjects during the Follow-up period

Broadly-defined cohort: Sufficient outcome data, from multiple sources, was available on 142 (72.1%) cases, an average 13 years after their index contact. Their mean age at follow-up was 41.3 years. First, I shall present results on global assessment of long-term outcome in probands for the entire follow-up period which reflect the cumulative score based on several outcome dimensions involving symptomatology, occupational and social functioning. Broadly speaking, half of the sample had 'good' global outcome during the follow-up, indicating that 71 of 142 cases were rated as functioning normally for more than 75% of the follow-up period. A further 22% (31/142) of cases continued to experience problems in various areas (symptoms, poor work record, relationship and

social problems) for at least 50% of the follow-up period. The remaining 40 (28%) cases were considered to be functioning normally for less than 25% of the follow-up period, of whom just over one-third (N=15) of cases killed themselves during the follow-up. Very few cases (N=4, 2.8%) were rated as having no period of normal functioning after their index contact.

Re-examination of global functioning in the sub-sample of 88 probands on whom intensive follow-up had been completed, including personal interview, indicated a similar outcome. Nearly half (48.4%) the probands with any 'lifetime' DSM-III-R PD (assigned by IPDE) were rated as having "good" global functioning (more than 75% period of normal functioning) during the follow-up period. Approximately, one-third (29.7%) of cases were considered to have normal global functioning 50% of the follow-up period. The remaining 22% of cases had "poor" global functioning (less than 25% period of normal functioning).

Not all probands with a clinical diagnosis of PD at index satisfied criteria for DSM-III-R PD. Comparison between cases with DSM-III-R PD diagnosis (N=110) and those with no-DSM-III-R PD (N=32) indicated a significantly better global functioning among the latter group during follow-up (Mann Whitney U test $Z=-4.66$, $p<.000$). Both groups were similar in demographic characteristics such as gender, age at index, education, and social class. Nonetheless, it appears that the no-DSM-III-R PD subgroup consisted of milder cases who would be expected to do better in the long-term compared to subgroup of probands with DSM-III-R PDs at index who clearly represent the more severe spectrum of the sample. Thus, probands with a DSM-III-R diagnosis of personality disorder at index have worse global outcome than those without. These results indicate face validity despite the limitations of PD diagnosis derived solely from hospital medical records.

Narrowly-defined cohort: Varying global outcome was also evident in the cohort of strictly defined probands who satisfied DSM-III-R criteria for PDs at index contact. Of the 110 cases with known outcome data, 41% (N=45) were rated as having "good" global functioning (ie. more than 75% period of normal functioning) during the follow-

up period. An additional quarter (N=28) were considered to have experienced difficulties in several areas of their life over roughly half of the follow-up period, before settling down at a later stage. The remaining one-third (N=37) were regarded either as having "poor" global functioning (less than 25% period of normal functioning), or committed suicide (12.7%).

These results demonstrate a variable outcome for PD patients ranging from complete remission to suicide, irrespective of whether the cohort was defined in accordance with DSM-III-R PDs or clinical judgement at index contact. They represent crude trends in global psychosocial outcome in hospital patients with a clinical diagnosis of unspecified personality disorders, at mean follow-up period of 13 years. Further breakdown of global functioning into its various components is presented in Tables 10.1 to 10.7, 10.9 & 10.10. I shall briefly describe individual outcome measures assessed for each subject at follow-up.

## 10.3. Psycho-social Outcome Measures Assessed at Follow-up

Long-term outcome in subjects was assessed in seven broad areas as follows:

(a) Overall severity ratings of personality disorder traits. The degree of interference due to certain personality traits in the patient's work, social and family life was rated on a 5-point scale ranging from "traits never bother", "traits are mild", through "traits are moderate" to "traits are severe" and "unable to function". This can be regarded as a crude index of severity. Table 10.1 shows the percentage of cases with PD severity ratings during the follow-up period in three cohorts. As expected, worse ratings were assigned to cases belonging to the narrowly-defined cohort. In general, a higher proportion of patients (66.4%) satisfying DSM-III-R criteria for PD were regarded as having moderate to severe traits which interfered with their social, occupational and family life compared to the co-twin group (14.0%).

(b) Further treatment since index discharge. Treatment-seeking behaviour was studied under four broad heading as follows: further hospitalisation, outpatient support, GP consultation/ treatment, and medication, if any, at follow-up. Tables 10.2 to 10.5 show

the distribution of cases (in percentage) for the three cohorts for each treatment measure respectively. Approximately half of narrowly-defined probands required one or more hospital admissions during follow-up. However, the majority of PD patients continued to seek outpatient support lasting more than a year, or support from their GP. At follow-up, just over one-third of probands were taking tranquillisers for psychological problems and an additional 9.7% were on non-psychotropic medication for physical complaints.

*Table 10.1. Ratings on severity of personality disorder traits during follow-up.*

| | **Broad Cohort (%) (N=141)** | **Narrow Cohort (%) (N=110)** | **Co-twins (%) (N=57)** |
|---|---|---|---|
| Traits never bother | 6.4 | 0.9 | 68.4 |
| Traits are mild | 24.8 | 20.9 | 8.8 |
| Traits are moderate | 27.7 | 30.0 | 7.0 |
| Traits are severe | 31.9 | 36.4 | 7.0 |
| Unable to function | 9.2 | 11.8 | 1.8 |

*Table 10.2. Percentage of cases with further hospital admissions during follow-up.*

| | **Broad Cohort (%) (N=140)** | **Narrow Cohort (%) (N=103)** | **Co-twins (%) (N=75)** |
|---|---|---|---|
| None | 57.1 | 50.5 | 81.3 |
| One | 11.4 | 10.7 | 6.7 |
| Two | 9.3 | 10.7 | 2.7 |
| 3 or more | 22.1 | 28.4 | 9.2 |

*Table 10.3. Percentage of cases needing outpatient care during follow-up.*

| | **Broad Cohort (%) (N=154)** | **Narrow Cohort (%) (N=115)** | **Co-twins (%) (N=73)** |
|---|---|---|---|
| No Outpatient Care | 17.5 | 12.2 | 74.0 |
| Once | 2.6 | 1.7 | 1.4 |
| < 1 month | 3.2 | 3.5 | 0 |
| 2-6 months | 2.6 | 00.0 | 2.7 |
| 6 months - 1 year | 6.5 | 2.6 | 2.7 |
| More than 1 year | 67.5 | 80.0 | 19.2 |

*Table 10.4. Percentage of cases seeking further help from their GP during follow-up.*

| | **Broad Cohort (%) (N=149)** | **Narrow Cohort (%) (N=112)** | **Co-twins (%) (N=66)** |
|---|---|---|---|
| No help from GP | 10.7 | 9.8 | 47.0 |
| Less than 6 months | 14.1 | 11.6 | 22.7 |
| > 6 months | 75.2 | 78.6 | 28.8 |

*Table 10.5. Percentage of cases taking medication at follow-up.*

| | **Broad Cohort (%) (N=128)** | **Narrow Cohort (%) (N=93)** | **Co-twins (%) (N=76)** |
|---|---|---|---|
| None | 43.8 | 36.6 | 73.7 |
| Minor tranquillisers | 14.8 | 18.3 | 6.6 |
| Major tranquillisers | 16.4 | 19.4 | 9.2 |
| Other non-psychotropics | 10.9 | 9.7 | 2.6 |
| N/A (ie. dead) | 14.1 | 16.1 | |

(c) Employment during the follow-up period. Performance at work was evaluated by three measures namely, percentage of time each subject was employed during the entire follow-up period, job satisfaction, and social class at follow-up based on their occupation (Tables 10.6 & 10.7). It is evident that similar pattern of employment was observed for broadly and narrowly-defined cohort of probands. Just over a third of patients had been employed for most of the time, whereas a quarter of cases remained unemployed throughout the follow-up period. On average, more individuals were dissatisfied with their job than satisfied. At follow-up, 30% of patients were unemployed, the remainder representing social class 3 to 5, with certain exceptions (8.6%) who now belonged to social class 1 or 2.

(d) Social and Family Relationships. Social adaptation was assessed in several ways as follows: adolescent friendship patterns, number of close friends, frequency of meeting friends, degree of satisfaction with other family members including partners and offsprings, where applicable. Looking at 'premorbid' social interactions, over three-quarters (77.1%) of the strictly defined cohort of PD patients reported "fair-poor" friendships between ages 12-18 (Table 10.8). They had no special friends (or just one special friend), reported being uncomfortable in groups, rarely initiated social activities, and preferred to be on their own for most of the time. This pattern of social isolation persisted through adult life in just over half of all cases who reported rarely meeting friends or only saw them at work (Table 10.9). When asked about relationships with other family members, over half of all PD patients reported considerable dissatisfaction with family members, including partners, through most of their adult life. Approximately half of the patient group had not found a partner, nor had any children of their own.

(e) Change in Marital Status at Follow-up. Similar results were found for both broadly-defined and narrowly-defined cohort of probands. No change in marital status was found in roughly two-thirds (62.1%) of probands (from broadly defined cohort) at follow-up. Of the 55 cases indicating a change, over two-thirds were married or cohabiting at follow-up; the remainder were single again.

*Table 10.6. Percentage time employed during follow-up.*

| | **Broad Cohort (%) (N=140)** | **Narrow Cohort (%) (N=105)** | **Co-twins (%) (N=77)** |
|---|---|---|---|
| All of the time | 25.7 | 21.9 | 71.4 |
| 75% of the time | 17.9 | 13.3 | 10.4 |
| 50% of the time | 15.7 | 16.2 | 5.2 |
| 25% of the time | 17.1 | 18.1 | 5.2 |
| No time | 20.0 | 25.7 | 3.9 |
| N/A | 3.6 | 4.8 | 3.9 |

*Table 10.7. Distribution of cases (percentage) by social class at follow-up.*

| | **Broad Cohort (%) (N=128)** | **Narrow Cohort (%) (N=93)** |
|---|---|---|
| I | 4.7 | 4.3 |
| II | 8.6 | 4.3 |
| III | 35.9 | 34.4 |
| IV | 8.6 | 9.7 |
| V | 6.3 | 8.6 |
| Pensioner | 7.8 | 7.5 |
| Student | 0.8 | 1.0 |
| Unemployed | 27.3 | 30.1 |

*Table 10.8. Adolescent friendship patterns among percentage of cases from the three cohorts (broadly- and narrowly-defined probands, and the co-twins).*

| | **Broad Cohort (%) (N=164)** | **Narrow Cohort (%) (N=122)** | **Co-twins (%) (N=83)** |
|---|---|---|---|
| Good | 36.6 | 23.0 | 63.9 |
| Fair | 41.5 | 49.2 | 20.5 |
| Poor | 22.0 | 27.9 | 15.7 |

*Table 10.9. Frequency of meeting friends during follow-up.*

| | **Broad Cohort (%) (N=118)** | **Narrow Cohort (%) (N=86)** | **Co-twins (%) (N=58)** |
|---|---|---|---|
| Once a week | 37.3 | 33.7 | 58.6 |
| Once in 2 weeks | 12.7 | 9.3 | 22.4 |
| Once a month | 14.4 | 16.3 | 5.2 |
| Only at work | 7.6 | 7.0 | 12.1 |
| Doesn't meet friends | 28.0 | 33.7 | 1.7 |

(f) Domicile at Follow-up. Subjects' domicile at follow-up was examined to gauge their degree of independence (Table 10.10). One-third of cases from both cohorts lived alone, primarily in rented accommodation. An additional one-third lived with their family (ie. partner and/or children). A very small proportion (3%-4%) of cases were in institutional care at follow-up. The remainder either lived with their family of origin, or shared accommodation with friends.

*Table 10.10. Current living situation at follow-up.*

| | **Broad Cohort (%) (N=153)** | **Narrow Cohort (%) (N=114)** | **Co-twins (%) (N=89)** |
|---|---|---|---|
| Hospital/Long care | 3.3 | 4.4 | 0 |
| With family of origin | 11.8 | 13.2 | 9.0 |
| With friends | 10.5 | 14.0 | 3.4 |
| Alone | 32.7 | 36.0 | 20.2 |
| With own family | 41.8 | 32.5 | 67.4 |

(g) Lifetime Axis I Disorders. Clinical data on lifetime axis I disorders (RDC defined) was obtained on 188 probands from multiple sources, including hospital case-records, postal questionnaires, GPs' correspondence, and interviews with probands, their relatives and staff.

Broadly-defined cohort: The majority (94.1%) of probands had a history of at least one concomitant axis I disorder; with a mean of 2.98 (range 1 to 8) 'lifetime' axis I disorders for the entire group. Only 11 (5.9%) had no axis I disorders during their lifetime. The four most common lifetime psychiatric disorders in the broadly defined PD cohort were, in order of frequency, minor depression (77.2%), major depression (41.6%), generalised anxiety disorder (41.1%) and alcohol abuse (35.0%). These disorders were episodic and did not necessarily co-occur simultaneously. Mean age at first psychiatric contact was 23.3 yrs (sd. 10.1), but most were first hospitalised two years later (mean age at first hospitalisation 25.3 yrs). A history of parasuicidal

behaviour, especially overdoses, was prevalent among probands (60.4%). A small proportion (17.8%) reported self-mutilation.

Narrowly-defined cohort: A similar clinical profile was apparent for the 138 probands from the strictly defined cohort. The presence of one or more lifetime axis I disorders was recorded in virtually all (96.4%) cases. The mean number of axis I disorders in narrowly- defined cohort was 3.23; the most common including minor depression (82.1%), major depression (44.8%), alcohol abuse (42.1%) and GAD (41.8%). A larger proportion of this subgroup were found to have a history of suicidal behaviour (71.8%) and self-mutilation (22.1%) than in the clinically defined cohort. They tended to seek psychiatric help earlier at a mean age of 22.5 yr (sd. 9.7), and their first hospital contact was at a mean age of 24.2 yr (sd. 9.7).

## 10.4. Psychosocial Outcome for Subjects with Specific DSM-III-R PDs

Does long-term psychosocial outcome vary for patients with different DSM-III-R PD diagnoses? Comparisons within narrowly-defined proband group, between specific PD groups versus the rest, on eight outcome measures (global functioning, severity of PD, further treatment, employment, social and family relationships, change in marital status, co-occurring lifetime axis I disorders, and domicile at follow-up) indicated significant differences between various diagnostic groups.

DSM-III-R Schizoid and Schizotypal PD: At index, 15 cases were assigned DSM-III-R diagnosis of schizoid (N=11) or schizotypal PD (N=10), based on case-record information. Of these, 6 (40%) cases qualified for both diagnoses. Considerable overlap was also noted with avoidant (N=12, 80%), and borderline PD (N=6, 40%). Outcome measures that distinguished schizoid/schizotypal group from other PD group were social functioning and no change in marital status at follow-up. First, looking at adolescent friendship patterns, poor or fair social pattern was reported, between ages 12-18, by all cases but one. They had no special friends, were uncomfortable in groups, rarely initiated social activities, and preferred to be alone most of the time ($X^2=6.573$, df=2, $p<.04$). This pattern of social isolation persisted through adult life. During follow-up,

83% of cases did not meet friends or only saw them at work. Furthermore, no change in marital status was observed among these cases who remained unmarried at follow-up compared to other PD group ($Z=-2.749$, $p<.006$). No significant differences were found between the two groups on other outcome measures.

DSM-III-R Paranoid PD: Fourteen patients were assigned 'definite' or 'probable' diagnosis of paranoid PD at index. More males were represented in this group than females (OR=6.6, 95% CI 1.4-30.2; Fisher's Exact test $p<.01$). Other co-occurring PD diagnoses commonly found among patients with paranoid PD were antisocial PD (OR=3.6, 95% CI 1.2-10.9; $X^2=5.79$, $p<.02$), schizotypal (OR=6.6, 95% CI 1.5-29.0; Fisher's Exact test $p<.03$), and sadistic PD (OR=9.6, 95% CI 1.5-63.1, Fisher's Exact $p<.04$). Half of sample with paranoid PD also satisfied criteria for antisocial PD. Like other cluster A PDs, patients with paranoid PD differed from other PD group primarily on social functioning. They were more socially isolated following their index contact ($Z=-2.24$, $p<.02$), although no difference in adolescent friendship pattern was found compared with non-paranoid group. Paranoid PD patients also reported greater dissatisfaction with their relationship with family members ($Z=-2.63$, $p<.008$). No significant difference was found between paranoid and other PD group on the remaining outcome measures.

DSM-III-R Antisocial PD: Antisocial PD represented the largest subgroup in this sample comprising 50 cases. Men were four times more likely to be assigned ASPD than females (OR=6.6, 95% CI 3.0-14.7). Significant overlap was observed in antisocial cases with borderline (37.8%, OR=2.2, 95% CI 1.1-4.6), paranoid (15.5%, OR=3.6, 95%CI 1.2-10.9), and sadistic PD (Fisher's Exact test $p<.001$). However, when the association between these PDs was re-examined using logistic regression, results indicated significant co-occurrence primarily between ASPD and sadistic PD; all five cases with sadistic PD also satisfied criteria for ASPD. Regarding 'lifetime' axis I disorders, a greater proportion of antisocial cases had a history of alcohol (71.8% vs 3.9%, $X^2=12.36$,$p<.0004$. OR=4.2, 95% CI 1.8-9.5), and drug abuse (51.3% vs 25.6%, $X^2=7.94$, $p<.005$, OR=3.1, 95% CI 1.4-6.8), and relatively few reported GAD compared to other PD group (31.4% vs 59.7%, $X^2=6.78$, $p<.01$). In terms of

other psychosocial outcome measures, the antisocial group reported significantly greater dissatisfaction with their family members compared to other PD group ($Z=-2.41$, $p<.02$), perhaps reflecting their unpopularity and rejection by others including their own family members. No further differences were found between the antisocial and other PD group on remaining outcome measures. On the whole, patients with ASPD had variable outcome; approximately 25% of cases indicated 'good' global functioning at follow-up.

DSM-III-R Borderline PD: Borderline PD was the second most common diagnosis at index assigned to 48 cases. Virtually all BPD cases had additional PD diagnoses, particularly histrionic (39.6%, OR=2.5, 95% CI 1.2-5.4), dependent PD (27.1%, OR=4.5, 95% CI 1.6-12.2), antisocial or avoidant PD. In contrast to ASPD, BPD was more common among women than men (OR=2.2, 95% CI 1.1-4.4, $X^2=4.56$, $p<.03$). Compared to other PD group, BPD patients were more likely to have poorer global functioning during follow-up ($X^2=4.11$, $p<.04$, OR=2.4, 95%CI 1.0-5.6) reflecting cumulative impairment in several areas including severity of personality traits ($Z=-2.84$, $p<.004$), further outpatient treatment during follow-up ($Z=-2.31$, $<.02$), and more 'lifetime' axis I disorders (4.1 vs 2.8, $t=-4.37$, $p<.000$). Over two-thirds reported less than 50% of normal period of functioning during follow-up, and included some cases with relatively shorter follow-up period of less than 9 years. Besides personality problems, extensive psychopathology was noted among borderline patients who reported multiple axis I disorders during their lifetime. Among the disorders more commonly found in borderline patients compared to other PD group include major depression (OR=3.8, 95% CI 1.6-8.9, $X^2=10.28$, $p<.001$), mania (OR=5.3, 95% CI 1.6-18.1), drug abuse (OR=4.3, 95% CI 1.9-9.6), eating disorders (OR=6.2 95% CI 1.6-24.3), and phobia (OR=3.0 95% CI 1.1-7.9). Significant differences on premorbid characteristics were also noted between the borderline and non-borderline group. Borderline patients reported poor adolescent friendship pattern ($Z=-2.48$, $p<.01$). Moreover, they were the youngest group to seek psychiatric help at mean age $19.4\pm6.0$ and were found to be significantly younger at their first hospital contact compared to other PD group (21.8 vs 26.7, $t=3.00$, $p<.003$).

DSM-III-R Histrionic PD: Of the 38 cases assigned a diagnosis of histrionic PD, none

were 'pure' HPD; all had multiple PD diagnoses, particularly borderline PD (OR=2.5, 95% CI 1.2-5.4). Due to extensive overlap with BPD, outcome of patients with HPD was similar to borderline group. Just over one-fourth of patients with HPD were rated as having good overall level of functioning since their index discharge. The remaining three-quarters indicated normal period of functioning for less than half of the follow-up period. Poor global functioning among HPD group was confirmed by logistic regression analyses whilst controlling for the presence of BPD (OR=2.5, 95% CI 1.0-6.3) compared with other PD group. A significantly greater proportion of patients with HPD received further treatment after index discharge than other PD group in form of outpatients' follow-up (Z=-2.84,p<.004), GP contact (Z=-2.35, p<.02), and medication at follow-up (Z=-1.98, p<.05). They also reported longer periods of unemployment during follow-up compared with other PD group (Z=-2.35, p<.02). No difference was found between HPD and other PD group on other outcome measures.

DSM-III-R Narcissistic PD: Of the three cases identified, two satisfied criteria for additional diagnosis of antisocial PD. No further statistical analyses were performed due to the small sample size.

DSM-III-R Avoidant PD: Avoidant PD was the most common cluster C diagnosis in the sample (N=45) representing patients of 'anxious/insecure' spectrum. Significantly more women were assigned AVPD than men (62.2% vs 37.8%, OR=2.1, 95% CI 1.0-4.3). Other PD diagnoses commonly found to co-occur with AVPD were dependent PD (OR=3.1, 95% CI 1.2-8.1), and schizotypal PD (OR=23.5, 95% CI 23.5-192.2). Also, over one-third of cases had an additional diagnosis of borderline PD. Furthermore, significant negative association was observed between AVPD and antisocial PD. Ratings on global functioning during follow-up indicated 'good' outcome for nearly half of the AVPD group. Those with relatively 'poor' global functioning (ie. less than 50% of normal period of functioning) were found to have concomitant BPD diagnosis. Re-examination of global outcome in AVPD group using logistic regression analyses which took into account the presence of both AVPD and BPD, indicated that the presence of BPD (OR=2.4, 95% CI 1.0-5.5) rather than AVPD (p<.57) seem to influence outcome in patients. Next, looking at individual outcome measures, the main problem area among

avoidant cases was their continued lack of social involvement compared to other PD group (Z=-2.93, p<.003). Like most other PD cases, patients with AVPD had a history of multiple 'lifetime' axis I disorders, however, just the association between panic disorder and AVPD was found to be statistically significant (OR=3.6, 95% CI 1.3-9.6). Finally, AVPD group was more satisfied in their relationship with other family members (Z=-2.11, p<.03) compared to other PD group.

DSM-III-R Dependent PD: 20 patients were assigned dependent PD diagnosis at index, of whom over one-third were considered to have had 'good' global functioning at follow-up. Like AVPD group, 'poor' global functioning was primarily accounted by the co-occurrence of BPD in patients. Logistic regression analyses on global outcome ratings for dependent PD group versus other PD group, controlling for the presence of BPD and AVPD (the two most common co-occurring PD diagnoses), suggested that BPD (OR=2.4, 95% CI 1.0-5.5) was a strong predictor of 'poor' outcome, not dependent or avoidant PD. Further treatment during follow-up in terms of both hospital (Z=-2.02, p<.04) and GP contact (Z=-2.23, p<.02) was sought more often by dependent PD group, particularly those with concomitant BPD. No other differences on individual outcome measures were found between dependent PD versus other PD group.

Other Cluster C disorders: Far too few cases were assigned DSM-III-R diagnosis of obsessive-compulsive PD (N=6) and passive-aggressive PD (N=1) to yield meaningful results. All these patients had additional PD diagnosis, and therefore, have been included in previous analyses. In general, outcome was similar for OCPD and other PD group on almost all measures.

## 10.5. Outcome in the Co-twins

One-third (N=47) of the co-twins were interviewed at follow-up. Of these, 7 (15%) satisfied DSM-III-R criteria for any PD, the remaining 40 (85%) had no PD diagnosis. Of the 7 PD cotwins, 3 were assigned "Not Otherwise Specified PD", one case each of avoidant, schizoid and antisocial PD, and two cases with multiple PD diagnoses. In contrast to probands, a finding of multiple diagnostic categories was less common in co-

twins; over two-thirds of the positive cases had only a single PD diagnosis. Cluster B disorders were under-represented among cotwins when seen at follow-up. The clinical history becomes more interesting when 'lifetime' axis I disorders were examined. Almost two-thirds (64.4%) of the cotwin group had a positive history for psychiatric illness during their lifetime. The most common axis I conditions among the cotwins, in order of prevalence, were minor depression (34.8%), major depression (25.6%) and GAD (13.9%). Mean number of 'lifetime' axis I disorders in the cotwins was 1.14, compared to 3.23 among the probands.

First, looking at the global functioning, the majority (80%) of cotwins had normal overall functioning during follow-up. An additional 2 (4%) cases were considered to have had more than 75% of normal period of global functioning. The remaining 7 (15%) subjects were rated as having 25% to 50% of normal period of functioning. As expected, cotwins with PD had significantly poorer ratings on global functioning than non-PD cotwins (Fisher's Exact test, $p < .0002$) after dividing ratings on overall level of functioning into "good" and "poor" global functioning. Next, looking at treatment measures, 17.8% received hospital treatment for psychiatric problems during their lifetime. However, nearly half (46.7%) the cotwin group sought help from their GP for minor psychiatric problems over a brief period lasting less than 6 months. The complaints were mainly related to mood and sleep disturbance. At follow-up, the majority (82.2%) were medication-free. 4 subjects were on antidepressants, 3 subjects on minor tranquillisers and one was receiving medication for physical illness.

The majority (N=35, 77.8%) of co-twins were actively employed or homemakers and reported being satisfied with their work. A further 5 (11.1%) co-twins had worked for more than 75% of the follow-up period. 2 subjects had worked for 25% to 50% of the follow-up period, and one subject had never worked. In terms of social and family relationships, most co-twins (88.4%) met friends on a regular basis. 2 (4.4%) subjects saw friends less often (once a month) and 3 (6.7%) subjects seldom socialised and were isolated. In contrast to probands, over two-thirds of co-twins had good adolescent friendship patterns between age 12-18. 10 (22.2%) cases were rated as "fair" and 4 (8.8%) cases as "poor". A large proportion of the co-twins reported being satisfied with

their relationship with other family members (71%), sexual partner (80%) and own children (93%). But a small subgroup of 7 (15.6%) subjects were clearly dissatisfied with members of their family. One-fifth of the co-twins had no partners at follow-up, and one-third had no children.

Table 10.10 indicates domicile of cotwins at follow-up. Three-quarters of co-twins were living with own family in rented or self-owned accommodation. Of the remaining 11 subjects, 15.6% were living alone, 7 (6.7%) co-twins were still with their family of origin and one co-twin lived with a friend.

To summarise, approximately 15% of the co-twin group satisfied DSM-III-R criteria for the presence of PD, and 64% reported a positive history for lifetime psychiatric disorder, particularly depressive disorder and/or GAD. In co-twins, PD was less severe, with reduced comorbidity (fewer multiple diagnoses), and better recovery. The majority (85%) of co-twins were found to have normal global functioning throughout the follow-up period. Most reported "good" social adjustment between age 12-18 and were actively employed, socially active, living with partners, more satisfied with work and other family members during the follow-up. Few (18%) had had hospital contact for psychiatric problems and had been treated by their GP for shorter periods.

## 10.6. DISCUSSION

The study confirms findings from previous follow-up studies that personality disorders are chronic and pervasive but that certain PD sub-groups have a more favourable long-term outcome than others (McGlashan, 1986ab; Stone,1987). After a mean follow-up period of 13 years, nearly half the probands with "any" DSM-III-R PD had "good" global functioning (ie. more than 75% of normal period of functioning), and an additional third were considered to have had normal global functioning over half of the follow-up period. The remaining 22% had "poor" global functioning (less than 25% of normal period of functioning). The outcome for subjects with PD was profoundly influenced by comorbid conditions, primarily additional axis II disorders.

Patients with DSM-III-R PD at index have a poorer global outcome than either subjects where no PD was established from hospital case-records at index or their cotwins. The subjects without PD diagnosis on DSM-III-R PD had nevertheless received a clinical diagnosis at index presentation. This group may have contained mild forms of PDs or sub-threshold PD traits which seldom led to long-term impairment. Likewise, the cotwin group may also be considered to represent cases of "mild" psychopathology. It is possible that the level of severity of the co-twins' psychopathology falls between that of the non-PD patient group and the general population. Cotwins of patients with PD are not only more likely to have an increased risk for psychopathology by virtue of sharing same biological parents and family environment, but are also likely to differ from the general population with regard to personality and other predisposing factors.

Notable differences were found between the proband and cotwin group, even though no direct statistical comparisons were made due to restricted sample size. As hypothesized, probands with DSM-III-R PDs represented the severe spectrum of psychopathology with multiple diagnoses of axis I and axis II disorders during their lifetime. A large proportion of the probands reported "poor" or "fair" premorbid friendship patterns, first psychiatric contact in their early 20s, further treatment during follow-up, periods of unemployment, social problems, dissatisfaction with family and partners, and few lived with own family at follow-up. In contrast, the majority of cotwins remained well, indicated normal global functioning throughout the follow-up period, were employed, socially active, and enjoyed relationship with friends and relatives, lived with their own family and reported good adolescent friendship patterns. Only a small proportion (15%) of co-twins met criteria for any DSM-III-R PD, although nearly two-thirds had a "lifetime" history of axis I disorders. Thus, having a diagnosis of PD implies impairment in several areas over a long period compared to those without PD diagnosis.

The importance of "comorbidity" in shaping the long-term course and outcome of specific PDs was demonstrated in this study. "Comorbidity" was used restrictively, referring to the co-occurrence of two or more DSM-III-R PDs in the same individual. Axis I disorders were not incorporated in the analyses. Broadly speaking, two themes emerged: (a) some PD diagnoses, such as STP and BPD, represented more severe

psychopathology and greater impairment in several areas over time compared to other PD diagnoses, especially disorders from cluster C, and (2) when these "severe" PDs co-existed with another "milder" PD, it was the former condition that tended to dictate the global outcome. For example, in the present study, nearly three-quarters of patients with histrionic PD had an additional diagnosis of BPD. Results of the logistic regression analysis suggested that presence of BPD, but not HPD, was the strong predictor of global functioning in these patients during the follow-up. Likewise, the presence of STP and/or BPD in patients with AVPD influenced the overall global outcome rather than the diagnosis of AVPD. It seems that disorders of cluster C are relatively "mild". Patients with these conditions alone have a better overall level of functioning during follow-up. The long-term course, severity and outcome of OCPD, however, is more uncertain because of restricted sample size.

The finding that "comorbidity" may influence the long-term outcome in PDs is consistent with previous follow-up studies in BPD which have shown a worse outcome for BPD patients with (a) concomitant schizotypal features (McGlashan,1986; Stone,1993), (b) concomitant antisocial features (Stone,1993), (c) concomitant narcissistic features (Plakun,1989), (d) concomitant major affective disorder - MAD (Plakun et al,1985; McGlashan,1986; Stone,1993), and (e) concomitant alcohol problems (Stone,1990). However, outcome was less favourable in the "pure" STPD group than STPD+BPD group in the Chestnut Lodge follow-up study (McGlashan,1986). Tyrer et al (1992) reported worse outcome at 2 years for an outpatient sample characterized by mixed anxiety and depressive symptoms with dependent, avoidant and obsessive-compulsive PDs. Unfortunately, the above studies, apart from that of Tyrer et al, selected "pure" BPD or STPD cases in order to establish their diagnostic validity and did not systematically examine the concomitant presence of the full range of DSM-III PDs. Comorbidity of PDs, and its negative effect on long-term outcome, may be more characteristic of hospital-based populations. In contrast, milder forms of PDs may be more prevalent in samples ascertained from primary care settings or the community.

Differential patterns of outcome were documented for specific PDs. Broadly speaking, patients with predominantly cluster A disorders seemed to have "poor" global

functioning, with more severe traits that did not improve over time. Impairment was most prominent in the social sphere, particularly for the schizoid and schizotypal group. Patients with predominantly cluster B disorders, particularly borderline and antisocial PD, demonstrated extensive impairment in almost all spheres during the first decade of their illness (through 20s). Moreover, they were relatively younger at first psychiatric contact (aged between 20-21), unlike cluster A and C disorder patients who were in their mid-to-late 20s. They also presented with multiple axis I disorders, especially substance use disorders, depressive symptoms, and GAD. These required further inpatient and/or outpatient treatment during the follow-up. However, a considerable proportion of these cases improved in their late 30s-early 40s and led more normal lives at follow-up. But in a subgroup of patients, little or no change occurred with age. Patients with predominantly cluster C disorders were more heterogeneous. Long-term outcome in this group was found to be influenced primarily by the presence of PDs from other clusters. For example, avoidant PD plus BPD, rather than avoidant PD alone, was found to have significantly poor global functioning compared to other PD group, tending to confirm the poorer prognosis for the cluster B group. In general, patients with cluster C disorders, showed relatively less impairment in various spheres than patients with either cluster A or cluster B disorders.

To date, there is only one prospective follow-up study of DSM-III-R PDs, based on a consecutive series of 97 patients admitted to a day unit specializing in the treatment of PDs in Oslo, Norway (Mehlum et al,1991). Although they reported on a shorter period of follow-up, 2-5 years after index admission, their outcome findings for the three DSM-III-R PD clusters were consistent with the present results. In their study, patients with BPD displayed a moderate symptom reduction and a fair global outcome at follow-up. STPD patients retained a relatively poor global functioning and were rated poorest of all subgroups in their level of social activity and social adjustment. Individuals with cluster C PDs, in contrast, showed both a good global outcome and a marked symptom reduction. These observations remain valid in the light of the present investigation, at a mean of 13 years after index contact.

Turning briefly to specific PDs, the combined STPD and SZD subgroup emerged as

having the poorest ratings on overall level of functioning. No significant symptom reduction was noted over time, particularly their social deficits and difficulties with intimate human relationships. This observation is in accordance with previous long-term follow-up studies involving DSM-III STPD/SZD cases (Wolff & Chick, 1980; Stone, 1983; Plakun et al,1985; McGlashan, 1986; Wolff et al,1991; Wolff & McGuire,1995). It must be questioned whether this was an illustration of "false comorbidity", as many cases with schizoid PD were found to also satisfy criteria for STPD and this could have arisen from several possibilities including overlapping diagnostic criteria, artificial subdivision of a syndrome, or one disorder being part of the other. Unfortunately, the restricted number of cases with either STPD or SZD PD did not permit separate reporting of the long-term outcome for individual diagnostic groups and which might have identified any major differences between the two categories.

Long-term outcome for BPD was of particular interest because of the opportunity to compare the present findings with other outcome studies on hospitalised borderline patients (McGlashan,1986; Paris et al,1987; Stone et al, 1987,1990). BPD patients in the present study were likely to be moderately impaired in all adaptive spheres: social, work, and relationships. They were the youngest PD group to seek psychiatric help at mean age of 20.2$\pm$6.9 yrs (range 7-35yrs), shortly followed by their first hospital admission, usually within a few weeks of their first consultation. Subsequently, an escalation of their condition through the 20s was typically observed. Over half the borderline patients had further hospital admissions, but virtually all patients received outpatient care after their index discharge. At follow-up, two-thirds of the cases were on psychotropic medication. Such heavy demand for further treatment during the follow-up was, in part, the result of extensive comorbidity in the form of both axis I and axis II disorders, particularly depressive symptoms, alcohol abuse, GAD and other cluster B personality disorders. Outcome in the social sphere was variable, half of the group were socially active, but the other half were either socially isolated or had restricted social involvement with others. This confirms McGlashan's report of a bimodal cluster of patients who appear with time to resolve in one or the other polarity, namely, "stably social" or "regularly distant". Likewise, only one-third were employed for most of the follow-up period, but few were satisfied with their job. BPD patients often remained

dissatisfied with their relationships, and at follow-up, two-thirds had no partners. Nonetheless, a significant proportion showed an improvement with age and reported relatively mild traits at follow-up. These findings are remarkably consistent with previous long-term outcome studies on BPD which indicate that two-thirds of the subjects can be expected to have a good global outcome when traced 10-15 years after index admission (Plakun et al, 1985; McGlashan,1986; Stone, 1987,1990).

Age at first treatment contact was found to vary for the three cluster disorders in DSM-III-R. Individuals with cluster B disorders (borderline, antisocial, histrionic PD) were among the youngest to seek psychiatric help at mean age of 20.4 yrs, and at their first hospitalisation (mean age 21.2 yrs), compared to individuals with cluster A and cluster C disorders who were in their mid-to late-20s. This observation of early hospital contact among cluster B patients including BPD, accords with research on BPD patients by Stone (1993) but contrasts with McGlashan's findings, where first treatment contact occurred in the third decade. This discrepancy could be attributed to sampling differences. McGlashan's sample comprised chronically ill, relatively older patients (mean index age 27 yrs) from wealthy backgrounds. They had received prior treatment without remarkable success and were narrowly defined by excluding patients with axis I diagnoses.

Limitations of the study: This study has a number of limitations that need to be considered when interpreting the results. To begin with, the use of a retrospective design may have affected assessments. Interview schedules used to assess lifetime axis I and axis II disorders, and certain measures of outcome, were based on the patient's account of the past which, for a variety of reasons, may be less reliable. To offset the limitations of the self-report method, efforts were made to gather information from additional sources, such as hospital notes of all previous admissions, close informants (generally the co-twin and/or mother) where possible, and GPs. Another limitation was the variable length of follow-up on patients. Although the mean follow-up duration of the total sample was approximately 13.5 years, a small subgroup (12.4%) were seen within 5 years of their index contact when they were unlikely to have changed. Such bias may have undermined the overall improvement observed for specific diagnostic groups, albeit

to a minor degree. In addition, the study was restricted to axis II "comorbid" conditions. Even though axis I disorders were known, they were omitted due to the limited number of cases. However, data on baseline and global outcome was available on a larger group of probands. This facilitated the examination of both axis I and axis II disorders which will be reported in the next chapter on prognostic factors for long-term outcome.

# CHAPTER 11. FACTORS PREDICTING OUTCOME IN PERSONALITY DISORDER SUBJECTS

## 11.1. Background

The definition of personality disorders implies chronicity with a 'life-long' or 'enduring pattern...'. Long-term follow-up studies therefore remain central in providing useful knowledge regarding their longitudinal course. Indeed, studies on prediction of outcome among PD patients are the acid test of the definition itself. An additional important task in follow-up work is the detection of those factors that correlate with outcomes which are distinctly better or worse than the average fate of the group in question. Although the literature is replete with statements like "mature", "get better with time", etc., there is still a paucity of true numerical based studies to support such statements. To date, there are three studies of prognostic factors for DSM-III personality disorders (McGlashan,1987; Stone,1990; Links et al, 1990), and virtually all investigations of predictor phenomena have been limited to borderline samples. Prognostic studies on long-term outcome of other PD categories are virtually nonexistent despite the availability of operational diagnostic criteria since the introduction of DSM-III in 1980. There is clearly a need to extend the prognostic enquiry beyond borderline PD to the other PDs listed in DSM-III-R and to empirically examine the truth behind the definition of PDs as 'persistent and enduring' disorders. This has been a primary objective of this thesis.

The present follow-up study examines the prediction of outcome in a mixed sample of personality disorder patients. A wealth of clinical and demographic data was available on each patient at index contact. This was systematically rated, blind to follow-up information. In the previous chapter, I have already presented the psychosocial outcome in 142 PD patients. In this chapter, I will examine the association between a range of baseline measures at index contact in PD patients and the subsequent global outcome at follow-up in order to identify predictor variables of good or poor outcome at follow-up. For the purpose of the present investigation, the overall level of functioning was used as the sole measure of global outcome because it reflected the cumulative score based

on all other outcome dimensions. Global functioning was dichotomised into good and poor outcome. Good outcome was defined as those probands rated to be functioning normally at or more than 75% of the follow-up period based on the overall global assessment. Poor outcome was defined as those probands considered to be functioning normally for 50% or less of the follow-up period. For convenience, predictor variables were grouped into three broad headings: (i) demographic/premorbid characteristics, (ii) antecedents, and (iii) indicators of psychopathology. Included in the prediction study were two cohorts: 142 probands from the broadly defined cohort, and 110 probands from the narrowly defined cohort, on whom sufficient outcome data were available at follow-up.

## 11.2. Results - Outcome groups defined in terms of Global Functioning

Broadly-defined cohort: The sample was divided into two broad outcome groups namely those 71 cases judged to have 'good' global outcome (more than 75% of time of normal functioning) during the entire follow-up period, and the remaining 71 cases who were judged to have "poor" global outcome (less than 75% of normal functioning during follow-up). Included in the latter group were 15 probands who committed suicide during the follow-up.

The number of cases with specific PD categories were insufficient to undertake a prognostic study of each axis II category individually. Instead, specific PD diagnoses at index served here as predictor variables of good or poor global outcome. All patients were re-diagnosed according to DSM-III-R criteria based on hospital case records at index contact, and the vast majority were assigned a definite or probable diagnosis of DSM-III-R PD (77.5%). However, a small proportion failed to meet sufficient criteria, and were therefore excluded from the narrowly defined cohort.

Narrowly-defined cohort: Using the global functioning score, 45 of the 110 probands with DSM-III-R PD at index comprised the "good" outcome group, and the remaining 65 cases formed the "poor" outcome group in this predictive study.

## 11.2.2. Primary vs Secondary PD diagnosis at Index and Global Outcome at Follow-up

Before examining specific predictors of outcome, it would be meaningful to test whether cases with primary and secondary PD diagnoses (by the clinicians) at index had different outcome at follow-up. Table 11.0 shows the distribution of cases with primary and secondary PD at index according to their global outcome. Results indicate that the separation of cases into primary and secondary diagnoses by the clinicians was unlikely to be of particular significance in the long-term outcome of PDs, in this sample. In subsequent analyses, therefore, all cases of primary and secondary diagnoses of PDs will be combined.

*Table 11.0. Global outcome at follow-up in probands with primary and secondary PD diagnoses (given by the clinicians) at index contact.*

| | Good Global Outcome | Poor Global Outcome |
|---|---|---|
| Primary PD | 50 | 51 |
| Secondary PD | 21 | 19 |

**Chi-square=0.1028, df=1, p<.75**

A look at the main mental state diagnoses in the 53 cases with secondary diagnoses of personality disorder revealed that almost half the group (48.1%) were given neurotic depression as the primary diagnosis by the clinicians. The remaining cases had a range of neurotic disorders such as anxiety states (5.7%), hysteria (5.7%), hypochondriasis (5.7%), obsessive-compulsive disorder (3.8%), acute reaction to stress (5.7%), anorexia (3.8%), sexual deviations and disorders (7.5%), disturbance of conduct not elsewhere classified (3.8%), and nondependent abuse of drugs or self-poisoning (13.2%).

## 11.3. Demographic Variables as Predictor of Outcome at Follow-up

Broadly defined-cohort: Of the 9 demographic variables examined in univariate analyses (Table 11.1), probands with poor outcome at follow-up had a significantly lower level of education (< high school), were of lower social class (3,4 or 5), were more likely to have been treated as inpatients rather than on an outpatient-alone basis at index, and had longer contact with the hospital (> 6 months) subsequent to index discharge. Subsequently, these four significant demographic variables were entered into a logistic regression equation; the summary of the final fit is presented in Table 11.2 which indicates that two of the four variables, lower education and inpatient status at index contact, remained in the model. Social class and duration of hospital contact at index were no longer found to be predictive of poor outcome at follow-up after adjusting for the presence of the other variables. The association of lower education (< high school) to poor outcome revealed an odds ratio of 3.5 (95% CI, 1.6 to 7.4). The odds ratio of inpatient status to poor outcome was 2.6 (95% CI, 1.2 to 5.9).

Narrowly-defined cohort: Repeat analyses on data of the narrowly defined cohort also confirmed the importance of these two demographic variables, namely lower education (OR=2.7, 95%CI 1.1 to 6.4, $p < .02$), and inpatient status at index (OR=0.4, 95% CI 0.2 to 0.9, $p < .04$) as the more likely predictors of worse global outcome at 13 years follow-up. Other demographic variables were not significant in predicting long-term outcome in DSM-III-R PD patients.

## 11.4. Antecedent Variables as Predictors of Outcome

Broadly-defined cohort: Likewise, univariate analyses were carried out to examine the relationship between good/poor outcome and 9 antecedent variables (Table 11.1), of which only two variables, delayed developmental milestones and history of sexual abuse during childhood, were found to be associated with poor outcome at follow-up (Table 11.2). The association of delayed developmental milestones to poor outcome revealed an odds ratio of 3.5 (95% CI, 1.3 to 9.7), and the association of a history of sexual abuse to poor outcome revealed an odds ratio of 3.8 (95% CI, 1.3 to 11.0).

Narrowly-defined cohort: No traumatic antecedent variables listed in Table 11.1 were

*Table 11.1. Univariate analyses on demographic/premorbid and traumatic antecedent variables: Predictors of poor (N=71) vs good (N=71) outcome in PD subjects from the broadly-defined cohort*

| | Poor (%) | Good (%) | Odds Ratio (95% CI) |
|---|---|---|---|
| **Demographic/Premorbid** | | | |
| Male sex | 46.5 | 45.1 | 0.9 (0.5-1.8) |
| Unmarried at Index | 60.6 | 53.5 | 0.7 (0.4-1.9) |
| Left School without Exam | 81.7 | 56.3** | 3.5 (1.6-7.4) |
| Mean age at index | 29.6 yr | 31.3 yr | F=0.86, p<.35 |
| Social class 3,4,5 | 91.4 | 78.9* | 0.3 (0.1-0.9) |
| Inpatient status | 60.6 | 36.6** | 0.4 (0.2-0.7) |
| Duration of Index Contact (> 6 mths) | 61.9 | 39.4** | 0.4 (0.2-0.8) |
| Mean age at 1st hospital contact | 24.7 yr | 26.7 yr | F=0.81, p<.37 |
| Poor adolescent friendship patterns | 75.0 | 60.0 | 0.5 (0.2-1.1) |
| **Traumatic Antecedents** | | | |
| Head Injury | 38.6 | 26.5 | 1.8 (0.8-3.7) |
| Physical abuse | 32.3 | 20.3 | 1.9 (0.9-4.1) |
| Sexual abuse | 22.7 | 7.2** | 3.8 (1.3-11.0) |
| Developmental delay | 27.9 | 9.8** | 3.5 (1.3-9.7) |
| In care/ fostered | 35.7 | 22.5 | 0.5 (0.2-1.1) |
| Parental loss before 16 | 12.7 | 16.9 | 0.7 (0.3-1.8) |
| Parental separation before 16 | 21.1 | 21.1 | 1.0 (0.4-2.2) |
| FHx of psych.dis. in 1° rel | 80.9 | 76.1 | 1.3 (0.6-3.0) |
| FHx of psychoses | 22.4 | 20.6 | 1.1 (0.5-2.6) |

**P <.05, **P <.01.*

*Table 11.2. Summary of the logistic regression model based on 137 PD cases to examine the relationship between demographic characteristics at index and poor outcome at follow-up.*

| **Variables in the Final Equation** | | | | | | |
|---|---|---|---|---|---|---|
| Variables | B | SE | Wald | Sig | Exp(B) | 95% CI |
| Education | -1.54 | 0.45 | 11.43 | .001 | 0.21 | 1.9-11.5 |
| Inpatient | 0.97 | 0.40 | 5.81 | .02 | 2.63 | 1.2-5.9 |
| **Variables Not in the Final Equation** | | | | | | |
| Soc class at index | | 0.26 | .61 | | | |
| Duration | | 1.55 | .21 | | | |

found to significantly predict good/poor outcome at follow-up in PD patients with DSM-III-R diagnosis at index.

## 11.5. Clinical Variables as Predictors of Outcome

Are specific PD diagnoses at index contact predictive of poor global outcome at follow-up? Tables 11.3 and 11.6 provide the list of clinical predictive variables examined in univariate analyses. They included all DSM-III-R personality disorder diagnoses at index contact, and history of any axis I disorders (RDC defined) during the follow-up period.

(a) DSM-III-R Personality Disorder Diagnoses at Index

Broadly-defined cohort: Analyses of specific DSM-III-R PD diagnoses indicates that subjects with cluster B disorders (antisocial, borderline and histrionic), with the exception of narcissistic PD, were significantly more likely to have a poor outcome during the follow-up period (Table 11.3). In addition, significantly more patients with DSM-III-R diagnosis of schizoid PD had poor global outcome. In contrast, global outcome was no different than by chance expectation among patients with cluster C disorders (avoidant, dependent, obsessive-compulsive, and passive-aggressive) compared to non-cluster C disorder patients. However, the numbers of cases with certain PD

*Table 11.3. DSM-III-R personality disorder diagnoses as predictors of poor (N=71) vs good (N=71) outcome in subjects from the broadly-defined cohort.*

| DSM-III-R PDs | Poor (%) | Good (%) | Odds Ratio (95% CI) |
|---|---|---|---|
| Any DSM-III-R PD | 92.8 | 63.4** | 7.5 (2.7-21.0) |
| Paranoid (N=12) | 13.4 | 4.3 | 3.5 (0.9-13.4) |
| Schizoid (N=11) | 13.4 | 2.8* | 5.3 (1.1-25.4) |
| Schizotypal (N=8) | 7.5 | 4.3 | 1.8 (0.4-7.8) |
| Antisocial (N=36) | 34.3 | 16.9* | 2.6 (1.2-5.7) |
| Borderline (N=39) | 41.8 | 15.7** | 3.8 (1.7-8.6) |
| Histrionic (N=30) | 32.8 | 11.4** | 3.8 (1.5-9.3) |
| Narcissistic (N=1) | - | 1.4 | |
| Avoidant (N=38) | 31.3 | 24.3 | 1.4 (0.7-3.0) |
| Dependent (N=18) | 16.4 | 10.0 | 1.8 (0.6-4.9) |
| Obsess-Compl (N=6) | 4.5 | 4.3 | 1.0 (0.2-5.4) |
| Pass-agg (N=0) | - | - | |
| Self-defeat (N=2) | 1.5 | 1.4 | 1.0 (0.1-15.6) |
| Sadistic (N=4) | 2.9 | 2.8 | 1.0 (0.1-7.6) |
| NOS (N=49) | 40.3 | 31.4 | 1.5 (0.7-2.9) |

***P <.05, **P <.01.**

categories, such as obsessive-compulsive and schizotypal PD, were small to indicate significant outcome results in the present study. These findings remained unchanged when re-examined using logistic regression analysis in which all four significant PD categories, namely, schizoid, borderline, histrionic and antisocial PD, were entered into the model (Table 11.4).

Narrowly defined cohort: A similar trend was observed in the strictly defined cohort (Table 11.5) where diagnoses of two cluster B disorders, borderline and histrionic PD, were predictive of a worse outcome at follow-up. Significantly more patients with

diagnosis of borderline PD (OR=2.5, 95% CI 1.1 to 5.7, $p<.03$), and histrionic PD (OR=2.5, 95% CI 1.0 to 6.2, $p<.05$) at index were found to have a relatively poor outcome at follow-up. In contrast, neither an index diagnosis of antisocial PD, nor any cluster A or cluster C disorders, were found to be significantly associated with poor global outcome in the narrowly defined cohort. Logistic regression analysis confirmed the significant association between poor outcome and DSM-III-R borderline PD but indicated a weaker association with histrionic PD.

(b) Lifetime Axis I Disorders

Broadly-defined cohort: To test the hypothesis that the overall outcome in patients would not only be influenced by their personality disorder status but also by the simultaneous presence of certain axis I disorders, all patients were rated for any past or current episode of RDC psychiatric disorders listed in Table 11.6 until follow-up, or death, where applicable. Results indicated that having more than 3 axis I disorders over the 'lifetime' was predictive of a poor global outcome. In particular, PD patients with a lifetime history of major depressive disorder and alcohol abuse were significantly more likely to have a poor global outcome than those without these conditions ($p<.03$). In addition, a small subgroup of patients (N=4) who subsequently experienced a psychotic breakdown during the follow-up period were found to have a poor global outcome. But due to the small number of cases, the difference failed to reach statistical significance ($p<.06$). Three of the four cases had schizo-affective episodes, and one patient developed psychotic symptoms (auditory hallucinations and paranoid ideas) following prolonged alcohol dependence and brain damage due to carbon monoxide poisoning. It is important to note that all cases with past history of functional psychoses were already excluded from the study at the beginning, and the psychoses that emerged during the follow-up period represented the first onset of these disorders.

**Co-occurring Axis I and Axis II disorders as Predictors of Long-term Outcome - Summary of Logistic Regression Analyses**: Finally, a combination of all significant clinical variables (axis I and II disorders) were entered into a logistic regression model to predict poor versus good outcome. Table 11.7 presents the summary of the final fit where four DSM-III-R PD diagnoses (schizoid, borderline, antisocial & histrionic PD)

*Table 11.4. Summary of logistic regression model based on 137 cases from the broadly-defined cohort to predict poor versus good outcome in subjects with DSM-III-R diagnosis of schizoid, borderline, histrionic and antisocial PD.*

| Variables | B | SE | Wald | Sig | Exp(B) | 95% CI |
|---|---|---|---|---|---|---|
| Histrionic | 1.34 | 0.49 | 7.28 | .007 | 3.83 | 1.4-10.2 |
| Schizoid | 2.07 | 0.84 | 6.15 | .01 | 7.97 | 1.5-42.5 |
| Antisocial | 1.09 | 0.46 | 5.64 | .02 | 2.98 | 1.2-7.5 |
| Borderline | 0.91 | 0.45 | 4.12 | .04 | 2.49 | 1.0-6.1 |

*Table 11.5. DSM-III-R PD diagnoses at index as predictors of poor (N=65) vs good (N=45) global outcome at follow-up in the narrowly-defined cohort.*

| DSM-III-R PDs | Poor (%) | Good (%) | Odds Ratio (95% CI) | Sig (p) |
|---|---|---|---|---|
| Paranoid | 14.5 | 6.8 | 2.3 (0.6-9.1) | |
| Schizoid | 14.5 | 4.5 | 3.6 (0.7-17.4) | |
| Schizotypal | 8.1 | 6.8 | 1.2 (0.3-5.3) | |
| Antisocial | 36.9 | 26.7 | 1.6 (0.7-3.7) | |
| Borderline | 45.2 | 25.0 | 2.5 (1.1-5.7) | .03 |
| Histrionic | 35.5 | 18.2 | 2.5 (1.0-6.2) | .05 |
| Narcissistic | - | 2.3 | 1.0 (0.9-1.0) | |
| Avoidant | 33.9 | 38.6 | 0.8 (0.4-1.8) | |
| Dependent | 17.7 | 15.9 | 1.1 (0.4-3.2) | |
| Obsess-compul | 4.8 | 6.8 | 0.7 (0.1-3.6) | |
| Pass-agg | - | - | - | |
| Self-defeat | - | - | - | |
| Sadistic | 3.2 | 4.5 | 0.7 (0.1-5.2) | |
| NOS | 43.5 | 50.0 | 0.8 (0.3-1.7) | |

*Table 11.6. Lifetime axis I diagnoses (RDC) as predictors of poor (N=71) vs good (N=71) outcome at follow-up in the broadly-defined cohort.*

| **Axis I disorders** | **Poor (%)** | **Good (%)** | **Odds Ratio (95% CI)** |
|---|---|---|---|
| Functional Psychoses (N=4) | 5.8 | - | 1.1 (1.0-1.1) |
| **Major Depression (N=78)** | **70.3** | **50.0*** | **2.4 (1.1-4.9)** |
| Bipolar (N=6) | 4.3 | 4.2 | 1.0 (0.2-5.2) |
| Hypomania (N=18) | 14.5 | 11.3 | 1.3 (0.5-3.6) |
| Minor Depression (N=118) | 93.9 | 83.6 | 3.0 (0.9-10.1) |
| **Alcohol Abuse (N=55)** | **50.8** | **31.4*** | **2.2 (1.1-4.5)** |
| Drug Abuse (N=39) | 33.3 | 24.3 | 1.6 (0.7-3.3) |
| GAD (N=66) | 54.5 | 47.6 | 1.6 (0.8-3.2) |
| Panic Disorder (N=24) | 19.4 | 15.7 | 1.3 (0.5-3.1) |
| Obsessive-compulsive (N=7) | 5.8 | 4.3 | 1.4 (0.3-6.4) |
| Phobic Disorder (N=20) | 14.5 | 14.7 | 1.0 (0.4-2.5) |
| Eating Disorders (N=11) | 7.3 | 8.4 | 0.9 (0.2-2.9) |
| Somatization Disorder (N=8) | 7.3 | 4.2 | 1.8 (0.4-7.8) |

**#p < .06, *p < .03.**

*Table 11.7. Summary of the logistic regression model based on 120 cases (broadly-defined cohort) to predict poor versus good outcome in subjects with combined axis I (past history of major depression and/or alcohol abuse) and axis II disorders (DSM-III-R diagnosis of schizoid, borderline, histrionic or antisocial PD).*

| **Variables in the final equation** | | | | | | |
|---|---|---|---|---|---|---|
| Variables | B | SE | Wald | Sig | Exp(B) | 95% CI |
| Histrionic | 1.45 | 0.49 | 8.87 | .003 | 4.29 | 1.6-11.3 |
| Schizoid | 2.05 | 0.85 | 5.87 | .01 | 7.78 | 1.4-42.5 |
| Maj Depres | 0.88 | 0.42 | 4.38 | .04 | 2.41 | 1.0-5.6 |
| **Variables not in the final equation** | | | | | | |
| Antisocial | | | 2.08 | 0.15 | | |
| Borderline | | | 0.84 | 0.36 | | |
| Alcohol | | | 1.52 | 0.22 | | |

and two axis I diagnoses (major depression and alcohol abuse) were entered into the model. Three variables, schizoid PD, histrionic PD and major depression, remained in the final fit, the other three variables namely, antisocial PD, borderline PD and alcohol abuse were excluded from the final equation. The association between the diagnosis of DSM-III-R schizoid PD and poor global outcome was strong, yielding an odds ratio of 7.78 (95% CI, 1.4 to 42.5). The association between diagnosis of histrionic PD and poor outcome was also strong revealing an odds ratio of 4.29 (95% CI, 1.6 to 11.3). The weakest though significant association was found between major depression and poor outcome yielding an odds ratio of 2.41 (95% CI, 1.0 to 5.6).

Narrowly-defined cohort: In the strictly defined cohort who satisfied DSM-III-R diagnosis of PDs at index, only previous history of major depression was identified as a significant predictor of worse outcome at 13 years follow-up. PD patients with worse global outcome at follow-up were twice as likely to have a history of concomitant major depression during their lifetime compared to patients with 'good' outcome (OR=2.2,

95% CI 1.0 to 5.0). Subsequently, all significant clinical variables (DSM-III-R borderline, histrionic PD and major depression) were examined together in 96 cases using logistic regression model. Results suggested that a high proportion of borderline and histrionic patients had history of major depression which may have confounded their influence on long-term outcome. After adjusting for the co-occurrence of both axis I and axis II disorders, it was revealed that only major depression was a significant clinical predictor of poor outcome at follow-up in the narrowly defined cohort, yielding an odds ratio of 2.54.

To summarise, few clinical variables at index contact were identified as strong predictors of good or poor outcome at follow-up, depending on the cohort's inclusion criteria. For instance, in the broadly defined cohort (with a clinical diagnosis of PD at index), the diagnosis of DSM-III-R schizoid, histrionic, borderline and antisocial PD was found to be significantly related to poor outcome at follow-up; whereas only DSM-III-R borderline and histrionic PD diagnosis at index were found to be associated with worse outcome at follow-up in the narrowly defined cohort. Among axis I disorders, history of major depression and, to lesser extent, alcohol abuse were predictive of worse outcome at follow-up.

## 11.6. DISCUSSION

The main findings on outcome prediction in patients with personality disorders are as follows. First, the strongest predictors of global outcome at follow-up belonged to the indicators of psychopathology. Within the restraints of making retrospective diagnoses of personality disorders at index, based on hospital case-records, patients with predominantly schizoid traits or DSM Cluster B disorders (borderline, histrionic and antisocial) were found to have worse global outcome than those without these disorders. Furthermore, prominent comorbidity with major depressive disorder had a negative effect upon long-term outcome. Second, very few demographic and traumatic antecedent variables were predictive of poor global outcome at follow-up, depending on whether the cohort examined was broadly or narrowly defined. On the whole, low educational achievement (less than high school) and inpatient status at index were identified as

significant predictors of worse outcome at follow-up. Although traumatic antecedent variables such as history of sexual abuse and delayed developmental milestones were identified as potential predictors of worse outcome in patients from broadly defined cohort, their influence could not be confirmed in the narrowly defined cohort, and therefore, may be explained as confounding effect associated with clinical conditions such as borderline PD and major depression.

It is hardly surprising to find that a pattern of pervasive psychopathology in patients with regard to multiple 'lifetime' mental state conditions co-occurring with axis II disorders predicts a negative long-term outcome. Among mental state disorders, history of major depressive disorder and alcohol abuse was found to be significantly associated with worse outcome at follow-up. These findings are broadly consistent with previous outcome studies involving BPD patients where the concomitant presence of major affective disorder was thought to lead to worse outcome than in those with borderline disorders or major affective disorder alone (McGlashan, 1983, Dahl,1986). One exception was the study by Pope et al (1983) who found that concomitant presence of MAD with BPD improved the outcome of the latter considerably. The complex relationship between MAD and BPD has been discussed by Gunderson & Phillips (1991). They attribute the co-occurrence of these disorders to the heterogeneity of each disorder. Whereas, others (Akiskal et al,1985; Dahl, 1986) favoured the primacy of affective disorder in many cases, while McGlashan (1983) saw depression as a nonspecific complication to primary BPD. Whatever the reasons, in this study, it appears that the presence of major depressive disorder, rather than minor depressive disorder or cyclothymia, in PD patients is predictive of poor global outcome at follow-up. Furthermore, major depression is also associated with suicide which comprised one-fifth (21.1%) of the poor outcome group in this study.

The emergence of 'psychosis' during follow-up period in four of the 142 cases (2.8%) is noteworthy. As expected, global outcome was poor in patients with psychoses compared to the rest who had no psychotic episode, but the affected cases were too few to reach statistical significance. Three of the four cases had experienced at least one episode of schizo-affective disorder, and the fourth case had a brief period of auditory

hallucinations and paranoid ideation following prolonged alcohol dependence and brain damage sustained through carbon monoxide poisoning. A close examination of these four cases with psychoses revealed that all had a diagnosis of DSM-III-R schizoid/schizotypal PD at index. Thus, it appears that a small proportion of patients with DSM-III-R schizoid/ schizotypal PD are at risk of developing psychoses during the natural course of their condition. It is intriguing that patients with DSM-III-R BPD diagnosis were not represented among those who had subsequent psychotic episode. Perhaps the sampling procedure adopted in this study may partly account for this because all PD patients with past history of psychoses were excluded from the study at the beginning. The recent modification in DSM-IV diagnosis of BPD to allow cases with transient psychotic episodes may make clinical sense as a small subgroup of borderlines would probably develop brief psychosis, under adverse circumstances, during their lifetime.

In the broadly defined cohort, the two PD diagnoses which emerged as the strongest predictors of poor global outcome were schizoid and histrionic PD. Diagnosis of schizoid PD was particularly associated with early death in the present sample; 5 of 11 cases with DSM-III-R schizoid PD at index had died during the follow-up, of whom 3 (27.3%) had committed suicide and one had an open verdict. The only other report on mortality among adults with schizoid condition was by Wolff & McGuire (1995) who conducted a 22-years follow-up of 33 women with childhood diagnosis of schizoid personality and found that 3 had committed suicide at follow-up. Additionally, alcohol abuse was also prominent among patients with schizoid PD in the present series.

The strong influence of histrionic PD diagnosis at index on the overall global functioning during the follow-up was intriguing. An outstanding feature of histrionic PD was its extensive co-occurrence with borderline PD in this study. Over half the patients with DSM-III-R histrionic PD also had a diagnosis of borderline PD. Because diagnoses were based on recorded information in hospital case-notes, rather than by personal interviews, it may have contributed to less sharper distinctions being made on the two sets of criteria. Nonetheless, such extensive overlap between histrionic and borderline PD highlights the unsatisfactory delineation of boundaries between them in both diagnostic systems, and may suggest that the relationship between histrionic PD diagnosis and poor

global outcome could be confounded by the presence of BPD, whose variable long-term outcome is well documented (McGlashan,1986; Stone,1990). Previous follow-up investigations have not examined patients with specific diagnosis of histrionic PD.

Patients with DSM-III-R antisocial PD (ASPD) were also found to be more vulnerable to poor global outcome during the follow-up. However, ASPD was no longer a strong predictor of negative outcome when adjustment was made in data analysis for the presence of other comorbid conditions such as BPD and alcohol abuse. To my knowledge, very few studies have examined the relationship between ASPD and long-term outcome in patients while simultaneously taking into account other comorbid axis I and axis II disorders. In the PI-500 series, Stone et al (1990) found that the co-existence of ASPD with BPD was predictive of poor long-term outcome. They found a much higher suicide rate in antisocial borderlines (17%). Moreover, borderline patients with ASPD were less likely to be traced (only 69%) and the functioning of male patients with both diagnoses was likely to be marginal. But the authors did not incorporate co-occurring mental state disorders in this subgroup. Robins' (1985) reported that having anxiety and depression in addition to antisocial personality was associated with an increase in the length of treatment. Clearly, having more than one diagnosis increases the chances both of entering treatment and of remaining in treatment.

Consistent with previous long-term follow-up studies, very few demographic variables were found to predict global outcome in the present series. Neither gender, nor, marital status at index had any effect on later outcome. But level of education of patient at index had prognostic implications; patients with less education, ie. less than high school, were found to be significantly more likely to have a poorer outcome compared to those with higher education (degree or 1-3 years trade skills). These results are congruent with reports by McGlashan (1986) and Stone (1990) who identified low IQ in patients as a predictor of negative global outcome. Most patients in this study were not subjected to IQ assessment at index, but presumably, more individuals with average to above average IQ would have pursued higher education, thereby, improving their job prospects when they became well enough to work.

Another demographic predictor variable identified in this investigation was being treated as an inpatient at index rather than on outpatient-alone basis. This measure could also serve as an index of severity where a patient had to be removed from their current circumstances in order to allow close supervision in hospital. Another crude indicator of severity of illness at index found to be linked to poor outcome was the length of duration of index contact until discharge from hospital. Patients with longer contact (> 6mths) were more likely to have worse outcome at follow-up compared to those with brief index contact. These findings are in agreement with part of McGlashan's (1986) work on prediction of outcome in borderline patients. In his study, one of the several predictors of good global outcome was shorter index hospitalization and discharge from index hospital rather than transfer to another institution.

I was able to identify two antecedent variables predictive of negative global outcome: delayed developmental milestones and positive history of sexual abuse. In this sample, both these events were found to be significantly over-represented in patients with DSM-III-R BPD and ASPD. Thus, the prognostic importance of these antecedent events is influenced by their complex interaction with specific PDs. The direction for future research into antecedent variables as predictors of long-term outcome must be multivariate analyses incorporating comorbid measures of psychopathology. In contrast to previous studies (Paris et al,1987; Stone et al,1990), no clear association was found between poor global outcome and positive family history of mental illness, younger age when first seen, or parental brutality (physical abuse) in the present investigation.

In this chapter, and the previous one, it is shown that the outcome for specific PD categories, and for the combined PDs, is variable. It is therefore important to identify factors which may predict good or poor long-term outcome in these patients. In the present study, certain measures of psychopathology, and antecedent variables were identified as predictors of a negative global outcome. These results demonstrate the existence and strength of predictors per se in a combined group of personality disorders. Future investigations will have to examine a wider range of "premorbid" and "antecedent" variables in large samples of specific PD categories in order to tease out the complex interaction between specific PD psychopathology and the environment.

# CHAPTER 12. METHODOLOGICAL CRITIQUE

Before summarising the main findings of this long-term outcome study of personality disorder patients, it is important to bear in mind the possible limitations of the present investigation which could influence the results reported in the preceding chapters. In this penultimate chapter, I would like to briefly discuss these methodological issues under the following five headings: bias in using a twin sample, entry criteria/inclusion bias, followed-up subsample bias, retrospective clinical and outcome data, and independence of data collection.

## 12.1. Bias in using a Twin Sample

a) Are twins like everybody else in their risk for psychiatric disorders? Bearing in mind that twins are not typical with respect to their prenatal and perinatal experience, should twins be used in studies of psychopathology? Compared with singletons, twins are known to have higher obstetrical complications (Bulmer,1970; Parisi,1974), risk for perinatal mortality (Naeye et al,1978), congenital malformations (Cunningham et al,1989), and mental retardation. But despite the evidence for an association between pre- and perinatal complications and twinship, no strong association is reported so far between twins and adult psychiatric illness, with one recent exception (Klaning et al,1996).

Relatively little research has addressed the question of whether twins are over-represented in psychiatric populations. Virtually all these studies focus on functional psychoses, particularly schizophrenia, and have paid scant attention to the broader spectrum of psychopathology. The consensus, in the earlier studies, was that rates of psychopathology in twins did not differ substantially from those found in singletons (Rosenthal,1960; Kringlen, 1967; Shields & Slater,1971; Allen & Pollin,1970; Gottesman & Shields,1972). Shields & Slater (1971) looked at the overall percentage of all twins attending the joint Maudsley and Royal Bethlem Hospitals in London during a 3-year period in the mid 1950s and found no excess of twins among psychiatric patients. However, Shields' sample was too small to detect any but most marked trends,

nor did he examine diagnostic categories within psychiatric disorders. Subsequently, an analysis of over 20,800 admissions to the joint Maudsley and Royal Bethlem Hospitals during 1970-78 showed no excess rate of twins for seven major ICD-9 diagnostic categories (schizophrenia/ delusional disorders, affective disorders, neurotic depression, other neuroses, personality disorders, substance abuse, and miscellaneous) (Chitkara et al,1988). While twins, in general, were not significantly over-represented in a psychiatric population compared with singletons, there was, however, a slight excess of a small subset of twins whose cotwin died before age 15 years in three diagnostic categories namely schizophrenia, personality disorders and substance abuse. Co-twin dead status was associated with being male, more perinatal complications and lower family history of major psychiatric disorders from case-note information. The authors proposed that factors leading to the death of one twin may be implicated in the later psychiatric morbidity of the survivor.

In a recent report by Klaning et al (1996), however, a population-based cohort of twins in Denmark were shown to have higher rates of first admissions for any psychiatric disorder compared to the general population. In particular, a 28% increase in the rate of first admissions for schizophrenia was found in twins compared to the total Danish population. The increase in psychiatric admissions was higher among twins from opposite-sex pairs. The authors acknowledged that their results differed from earlier studies but felt that the increased risk could not be explained by known methodological problems. Unfortunately, the authors did not examine first-admission rates for other specific diagnostic categories, besides schizophrenia. Further studies are needed in order to confirm these findings and to identify specific risk factors responsible for an increased occurrence of schizophrenia in twins. Also, data on admission rates for other diagnostic categories is required on population-based twin cohorts.

To summarise, conflicting evidence exists regarding an increased risk of adult psychiatric disorders among twins. A recent population-based twin study in Denmark has shown an increased occurrence of schizophrenia among twins, but the risk to other specific psychiatric disorders is still unclear. Nonetheless, disorders confounded by obstetric complications associated with twinship should be analyzed cautiously.

Unlike many other research strategies, the adequacy of twin samples can be verified by internal checks on the proportion of the two sexes, the proportion of various zygosities, and whether twins are over-represented in any particular diagnosis. It is evident from Table 3.1 that both sexes were equally represented among the proband and co-twin group. With regard to zygosity, one would expect to find approximately similar proportion of MZ, DZ-same sex and DZ-opposite sex twin pairs in the total sample. However, in the present series, MZ twins were somewhat under-represented (18%) compared with DZ-same sex twins (34%) and DZ-opposite sex twins (30%). Additionally, 24 cases were classified as "co-twin dead" because the second member of the twin pair was reported to have died shortly after birth or during infancy. Zygosity was determined by physical resemblance questionnaire and blood typing, where possible. But as in all twin studies, information on zygosity was unavailable or unreliable in ten pairs of twins (5%). It is feasible that some of the MZ cases may have been classified in this study as either "co-twin dead" or "zygosity not known". However, there is no way of clarifying this issue with the present data set. Finally, part of the present study sample (cases seen during 1967-78) were subject of an earlier investigation on twin birth and adult psychiatric disorders by the author where it was shown that twins were similar to singletons in their risk to a wide range of psychiatric disorders, including personality disorders (Chitkara et al,1988). Results indicated that 1.96% of all patients registered during 1967-78 were of twin birth which is similar to the proportion of twins reported for the general population at birth (Heady & Heasman,1959). Further examination of twin distribution within each of seven major psychiatric categories confirmed no significant excess of twins compared with singletons in the context of the entire psychiatric population from which they were drawn. In view of the internal checks on the adequacy of twin sample used in the present investigation, it would be reasonable to suggest that the consecutive series of twin probands used here were not substantially different from non-twin patients in their risk for psychiatric disorders. Therefore it seems likely that results generated from this long-term outcome study of personality disorder twin probands can be generalised to non-twin patients with similar psychopathology. Provided researchers accommodate for the potential limitations that come with using twins, there is no reason not to proceed with the use of twins in the study of adult psychiatric disorders.

b) Use of Co-twins for Comparison: Most investigations using twins fall into two basic categories. In one, namely the classic twin studies (which compare disease concordance in monozygotic and dizygotic twins), genetic factors that contribute to the cause of disease are assessed directly. In the other category, namely other twin study designs, hereditary factors are excluded so that the aetiologic importance of non-genetic factors can be evaluated in comparisons that control genetic variation. The present investigation, in part, falls into the latter category where co-twins were used as controls and within-pair comparisons were made, for example, on rates of death during follow-up. The advantage of utilising co-twins as controls was that they were better matched for age, family background, early rearing experiences as well as genotype which could have contributed to the formation of PDs. But although the twins may have differ from one another with respect to PDs, their risk of psychiatric disorders in general may have well been somewhat higher than those selected from the general population. One recourse would have been to have used only highly discordant pairs, but the sample may then become biased, unrepresentative and so small that it would not have been possible to detect a difference as readily as in this study with a larger number of twin subjects treated as individuals, in which the full range of differences in exposure was considered.

## 12.2. Inclusion Bias in Sampling - Entry criteria based on Hospital Case-records

Like most follow-up studies, the present investigation deals almost entirely with the severe end of personality disorder spectrum. Only those cases who were registered in a psychiatric hospital setting, and had received a clinical diagnosis of personality disorder at index discharge were selected. But reliance on clinician's diagnosis of PD as the main entry criteria has its drawbacks. Often the distinction between normal and abnormal personality, and between the premorbid personalities of patients with psychiatric illness and personality disorders is unclear, arbitrary, and one of degree (Tyrer et al,1979; Mann et al,1981). Clinicians assess PD by interviewing the patient, without following a standard format, and may therefore fail to cover the full range of behavioural repertoire enlisted in recent classifications of PDs. In practice, the clinician is not concerned with the threshold for a PD diagnosis, but whether PD is significantly maladaptive and how to manage it. They are, therefore, inclined to assign a single PD

diagnosis despite pronounced co-occurrence of other PDs.

The retrospective study design adopted here has several limitations. One of the major problems is the inconsistent quality of clinical information recorded in hospital documents. Diagnostic criteria have changed over the years leading to incompleteness of the old records with respect to variables whose importance was not suspected two decades ago. Furthermore, information available in case-records is influenced by several factors including clinicians' experience in diagnosing PDs in patients, clear description of patient's specific behaviours/attitudes that may have dictated clinician's final diagnostic judgement, duration of contact a patient may have had with the clinician/hospital, and history of other axis I conditions. Inevitably, such inconsistencies result in difficulty in applying DSM criteria retrospectively based on hospital case-records. The point is illustrated in Chapter 6 where disagreement is reported in PD diagnoses at index assigned by clinicians and by researchers based on hospital case-records alone. Moreover, certain PD categories such as narcissistic, passive-aggressive and self-defeating were unidentified or under-represented when PD diagnoses were made retrospectively. Subsequently, at follow-up, I was able to identify some of these cases through personal interviews although retrospective assessment of 'lifetime' or 'past and current PD' was undoubtedly marred by selective memory and reporting by the patient.

This study departs from previous follow-up studies by presenting outcome for two cohorts of PD patients namely, a broadly-defined and a narrowly-defined group. The former group comprised of all patients with a clinical diagnosis of PD, including a subgroup of patients with milder expressions of personality aberrations, who did not fit comfortably into DSM-III-R nomenclature. These individuals may have otherwise had tolerable personalities except for one or two offensive traits which may have rendered them just as handicapped as persons with diagnosable PDs. Included here were persons who are markedly jealous, garrulous or stingy. As yet, little was known about the long-term outcome in this subgroup of patients thereby justifying their inclusion. But clearly, in view of only modest correlation between diagnoses derived from application of operational criteria to hospital case-records with clinical diagnoses, it was considered unwise to proceed only with patients selected solely on the basis of clinicians'

judgement. To allow comparison across studies, operational criteria (DSM-III-R) were used to define the second cohort. This narrowly-defined group comprised of all patients from broadly-defined cohort who satisfied DSM-III-R criteria for 'definite' or 'probable' diagnosis of PDs at index.

## 12.3. Follow-up Sub-group Bias

a) Participating Cohort vs Missing Cohort at Follow-up: Like all previous outcome studies, I encountered the problem of losing a proportion of subjects (21%) at follow-up for a variety of reasons including refusals, no trace, and residing abroad. It was therefore necessary to examine whether these nonparticipating subjects constituted a biased subgroup with a poorer or better outcome. In the absence of available follow-up data it was indeed difficult to know the full outcome of the study sample. Nonetheless, I had some baseline data on all subjects at index from initial assessment which was used to make comparisons between the missing cohort and participating cohort to test whether these groups had different profiles. No significant differences were found between the two groups on over thirty demographic and clinical variables, with one exception namely, inpatient status at index. More participators received inpatient treatment at index compared with non-participators who were more likely to be treated on outpatients basis. Although inpatient treatment may be indicative of severe problems and greater disruption in patient's routine, it could also be an option for those patients who were referred from outside catchment area. Moreover, patients receiving inpatient care may have been easier to locate through NHS Central Register. It was, nevertheless, reassuring to find that both the participating and the missing cohort were no different on clinical characteristics.

b) Variability of Outcome Data on Individuals: Another source of bias in follow-up was the variability of outcome information gathered on individual subjects. In some cases, face-to-face interviews with patients were conducted. In other cases, informants were interviewed at length, and at other times the contact was long enough only to pursue highly specifiable core factual data. Also, at times, information was gathered from hospital records and other medical staff involved in the care of the patient. Each of these variations might be expected to introduce certain bias in outcome assessment. More often than not, face-to-face format seemed to provide a wider range of observations and should

therefore be regarded as more accurate. Whereas outcome assessment based solely on medical documentation without any personal contact with the subject may have skewed judgements in the direction of poorer outcome.

## 12.4. Retrospective data collection at Follow-up

In this study, not only were baseline measures at index collected retrospectively, but much of the follow-up data was also gathered in retrospect. Clinical and outcome assessments were made 'longitudinally' for the entire follow-up period, as well as 'cross-sectionally' at follow-up, thus raising the question of accuracy of measures. Patient's self-report are invariably subjected to selective recall and reporting, thus compromising the truth. However, gaining information regarding one's inner personal fears and experiences requires direct questioning with the person concerned, and some distorted recollections are unavoidable. Attempts were therefore made to gather data from additional sources such as previous medical records, GPs, and from a family member or close informant, where possible. The sole use of patient's self-report was rare. Despite the limitations of the self-report method, a lot of useful information was collected in this study regarding the long-term outcome in PD patients.

## 12.5. Independence of Data Collection

All assessments at index were made blind to evaluation at follow-up, by two independent raters. In other words, if rater A collected baseline data at index contact for a patient, then rater B carried out the follow-up assessment on the same patient subsequently. At follow-up, however, both clinical and outcome evaluations were made by the same rater, due to limited funding. There were several advantages in having the same rater perform both evaluations at follow-up. First, it was time saving to collect all follow-up data from the subject in a single meeting. Subjects were more likely to co-operate for a one-off meeting rather than for repeated appointments with different staff members. Second, a thorough clinical assessment of 'lifetime' axis I and axis II disorders yielded considerable information on the subject's psycho-social functioning which could be translated into outcome ratings, with additional probing. The disadvantage of having the same rater

make clinical and outcome evaluations involves the risk that judgements may be biased by perceptions that are distorted. An attempt to overcome this methodological flaw was made by rigorous use of IPDE, SADS-L and Outcome rating scales with carefully defined anchor points. In theory, strict adherence to scale values should reduce subjective judgements by individual raters.

Despite the weaknesses highlighted in this chapter, the study has a number of advantages. It used standardised instruments involving face-to-face interviews, covered the full range of axis I and axis II disorders, utilised two sets of diagnostic criteria: clinical diagnoses and DSM-III-R PDs, made multi-dimensional evaluation of outcome where criteria were applied longitudinally as well as cross-sectionally. Non-participating follow-up subjects were tested for possible bias. More importantly, principal confounders, such as comorbid axis I and axis II conditions and certain demographic factors, were identified and controlled for in the statistical analyses. Finally, it is perhaps the first long-term outcome study, based on a British sample, to examine subjects with the full range of DSM-III-R PDs.

# PART III. CONCLUSIONS

The primary aim of the study was to provide long-term outcome for patients diagnosed as personality disorder in a British hospital setting. The subjects were followed-up, retrospectively, over a mean period of 13 years. Outcome was assessed in several areas of functioning including morbidity and social functioning. Data was obtained from multiple sources, including personal interview with subjects, where possible. Depending on diagnostic classification adopted at index, results are presented for two cohorts namely, a broadly-defined (patients with clinical diagnosis of PD) and a narrowly-defined (DSM-III-R PDs) sample. Unlike previous outcome studies of PDs, all patients included in the study were of twin birth. However, this was not strictly, a twin study of personality disorders addressing genetic issues. Instead, the co-twin control method was used where co-twins served as a comparison group for probands, particularly because of the close match between them on a wide range of early life experiences.

Of the 197 patients with a clinical diagnosis of PD, adequate follow-up was obtained on 79% of cases, of whom 59% were interviewed at follow-up. The follow-up subsample was taken to represent the total sample following bias testing which indicated no significant difference between the participating and non-participating subsample on a wide range of demographic and diagnostic variables, except that the former were more likely to have been treated as inpatients at index contact.

Findings at follow-up were consistent with previous outcome studies indicating the persistent and chronic nature of personality disorders which appear to remain relatively stable over time in the majority of cases. Almost two-third of the broadly-defined cohort, and three-quarter of narrowly-defined cohort, satisfied criteria for DSM-III-R PD at follow-up. The remaining cases had remitted and no longer received a PD diagnosis when interviewed. Furthermore, it was demonstrated that, gradually with increasing age, some PDs became less pronounced over time, whereas others showed little or no change. In general, cluster B disorders (antisocial, histrionic and, to lesser extent, borderline PD) were shown to improve with time, but little change was observed in patients with cluster A (schizoid, schizotypal and paranoid PD) or cluster C disorders (obsessive-compulsive,

dependent, and passive-aggressive PD), with exception of avoidant PD. In addition, a decrease in multiple diagnoses of PDs was observed at follow-up. Patients were more likely to show an improvement when assessed at longer follow-up interval of over 10 years. Those seen within the first 5 years of their index discharge rarely showed improvement.

Several aspects of psycho-social outcome were examined including 'global' functioning during the entire follow-up period based on six components namely, symptomatology, further treatment, employment, social patterns, close relationships, and domicile. Results demonstrated a variable outcome for PD patients ranging from suicide to complete remission. Of the 142 cases on whom follow-up was obtained, half of those with "any" DSM-III-R PD diagnosis had "good" global functioning (ie. normal functioning for more than 75% of the period) during follow-up. An additional 22% of cases reported some change over time but continued to experience problems in several areas for at least 50% of the follow-up period. The remaining 28% had "poor" global functioning (ie. normal functioning for less than 25% of the period). Similar findings were observed in the subsample of 88 patients who were interviewed at follow-up. In contrast, the majority (80%) of co-twins, interviewed at follow-up, showed normal global functioning during follow-up. But, approximately 15% of co-twins had "poor" to "moderate" global functioning (between 25-50% of normal period of functioning). Psychiatric morbidity (axis I and II disorders) was the main cause of "poor" outcome among co-twins.

Outcome was found to be profoundly influenced by other comorbid conditions, especially the presence of additional axis II disorders. Broadly speaking, two themes emerged as follows: i) some PD categories, such as schizotypal and borderline PD, represented more severe psychopathology and greater impairment in several areas over time, than other PD groups, especially cluster C disorders such as dependent or passive-aggressive PD; ii) when these "severe" PDs co-existed with another "milder" PD, it was the former condition that tended to dictate the global outcome. It seems that cluster C disorders are relatively "mild" PDs. Patients with these disorders alone have better overall level of functioning during follow-up. It appears that comorbidity of PDs, and its negative effect on long-term outcome, may be characteristic of hospital-based populations. Whereas,

samples ascertained from the community or primary care setting may represent "milder" forms of PDs.

Differential patterns of outcome were documented for specific PD groups. Broadly speaking, patients with predominantly cluster A disorders (schizotypal, schizoid and paranoid) seemed to have "poor" global functioning, with more severe traits that seldom improved over time. Impairment was most prominent in the social sphere, particularly for the schizoid and schizotypal group. Whereas patients with predominantly cluster B disorders, particularly borderline and antisocial PD, showed extensive impairment in almost all spheres during the first decade of their illness (through 20s). They were relatively younger at first psychiatric contact (mean age between 20-21 years), unlike cluster A and cluster C disorder patients who were in their mid-to-late 20s. They also presented with multiple axis I disorders, especially substance use disorders, depressive symptoms, and GAD. These often required further hospital treatment during follow-up. However, a considerable proportion of these cases improved in their late 30s - early 40s and led more normal lives at follow-up. But in a subgroup of patients, little or no change occurred with age. Finally, patients with predominantly cluster C disorders were more heterogeneous. Long-term outcome in this group was found to be influenced primarily by the presence of PDs from other clusters. On the whole, cluster C patients showed relatively less impairment in various spheres than patients with cluster A or cluster C disorders.

One-third of PD patients with "poor" outcome had committed suicide. Examination of mortality rates for patients and co-twins showed that more PD patients were likely to have died during follow-up compared to co-twins. Ten percent of patients (broadly-defined cohort) were dead at follow-up compared to 3.6% of co-twins. The excess mortality among PD patients was due chiefly to suicides (7%). No difference was found, however, between the two groups on death by natural causes or accidents. Premature death in the co-twin group was found to be associated with psychiatric morbidity. Although over half the co-twins were known to have remained well, almost all those who died during the follow-up had been psychiatrically ill, mainly suffering from affective disorder or alcohol dependence.

Further attempts were made to examine the relationship between suicide and specific PD diagnoses. Among DSM-III-R PDs, diagnosis of borderline and schizoid PD were most likely to be associated with an outcome of suicide. Although previous studies had demonstrated a link between borderline PD and suicide, none had adjusted for the presence of other comorbid conditions in their analyses. By doing so in the present study, I re-confirmed the link between BPD and suicide. More importantly, it was observed that history of taking repeated overdoses was a strong risk factor among the borderline patients, who primarily died of overdosing, but not among schizoid subgroup who died of varied causes such as severe burns or drowning. Among axis I disorders, history of major depression and alcohol abuse was found to increase suicide risk in patients.

Finally, attempts were made to identify variables predictive of "good" or "poor" global outcome in PD patients. A set of variables were identified as predictors of negative global outcome from each of the following three categories: psychopathology, demographic, and antecedents. Patients with prominent schizoid features or cluster B disorders (borderline, histrionic, and antisocial PDs) were found to have "poor" global outcome at follow-up. In addition, comorbidity with major depressive disorder too had a negative effect upon long-term outcome. Patients with lower level of education (less than high school) were more likely to have a "poorer" outcome compared to those with higher qualification (degree or 1-3 years trade skills). Also, having received inpatient treatment at index was predictive of worse outcome at follow-up. Furthermore, two antecedent variables namely, delayed developmental milestones and history of sexual abuse, were also found to be predictive of negative global outcome. The prognostic importance of these antecedent and demographic variables was influenced by their complex interaction with specific PDs.

In general, marked variability in the course and outcome of PDs was observed, regardless of the diagnostic system employed (clinical diagnoses or DSM-III-R). Long-term outcome was reported for a wide spectrum of PDs, beyond borderline and schizotypal PD. The above findings were, no doubt, influenced by the methodological limitations outlined in the preceding chapter, particularly the retrospective design adopted

in this investigation. Moreover, insufficient number of cases of certain PD categories (eg. obsessive-compulsive, narcissistic, passive-aggressive) made it difficult to examine their longitudinal course with accuracy. Future endeavours should, ideally, incorporate prospective design with a larger cohort of PD cases and controls, over a follow-up period of more than ten years. More importantly, future research into PDs must adjust for comorbid conditions (axis I and II disorders) when addressing issues relating to aetiology, longitudinal course, and outcome.

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# OUTCOME ASSESSMENT SCALE

**Name**:

**Date**:

**Time elapsed since subject's discharge from the Maudsley**:

## A. Further Treatment

(1) The approximate percentage of time the subject has been on medication for emotional problems since index discharge from the Maudsley Hospital.

__(0) No time
__(1) About 25% of the time
__(2) About 50% of the time
__(3) About 75% of the time
__(4) Just about all of the time
__(9) No information or N/A

(2) If subject has taken medication for emotional problems since index discharge, check the type of drugs received and get an estimate of the duration on each drug type.

| | | |
|---|---|---|
| __ | Major tranquilisers | Estimated length _____ |
| __ | Lithium | _____ |
| __ | Antidepressants | _____ |
| __ | Minor tranquilisers | _____ |
| __ | ECT | _____ |
| __ | Other psychiatric medication | _____ |

(3) The approximate number of times the subject has been admitted to psychiatric hospitals since index discharge.

__(0) None __ __ Specify number

(4) Approximate duration of Outpatient contact since index discharge.

--(0) None
__(1) Once
__(2) Less than 1 month
__(3) 1-6 months
__(4) 6 mth-1 year
__(5) More than 1 year

(5) Is the subject currently taking medication for emotional problems? If so, check the kind of treatment and/or drugs being used.

## B. Employment

Active employment is defined as doing work for pay, pursuing studies as a student, caring for a household and raising children, or engaging in volunteer work. Describe work history since index discharge.

(6) Percent of time has been actively employed since index discharge (through entire follow-up period - exclude any time spent in hospital)

__(0) Just about all of the time
__(1) About 75% of the time
__(2) About 50% of the time
__(3) About 25% of the time
__(4) No time since index discharge
__(9) No information

(7) Specify current employment situation (or subject's employment situation before retirement)

(8) Best estimate of subject's socioeconomic class at follow-up

__(1) Social class I
__(2) Social class II
__(3) Social class III
__(4) Social class IV
__(5) Social class V
__(6) OAP
__(7) Unemployed
__(8) Student
__(9) No information

(9) Percent of the time the subject has been happy and satisfied with his/her performance in work over the total follow-up period.

__(0) Just about all of the time
__(1) About 75% of the time
__(2) About 50% of the time
__(3) About 25% of the time
__(4) No time since index discharge
__(9) No information

## C. Social Activity

(10) Approximate number of times the subject currently (past year) meet with friends outside his/her family.

__(0) At least once a week
__(1) About once every 2 weeks
__(2) About once a month
__(3) Meet only at work or school
__(4) Does not meet with friends
__(9) No information

(11) Estimate how often the subject is currently satisfied and happy with his/her relationships with friends outside his/her family.

__(0) Just about all of the time
__(1) About 75% of the time
__(2) About 50% of the time
__(3) About 25% of the time
__(4) Seldom or not at all
__(9) No information

(12) Approximate number of times the subjects currently meet with family members excluding spouse and children (ie. parents, siblings, in-laws, and/or other close relatives).

__(0) Daily or almost daily
__(1) Once a week
__(2) Once every two weeks
__(3) Once a month
__(4) Seldom or not at all
__(9) No information

(13) Estimate how often the subject is satisfied and happy with his/her relationship with family members (excluding spouse and children).

__(0) Just about all of the time
__(1) About 75% of the time
__(2) About 50% of the time
__(3) About 25% of the time
__(4) Seldom or not at all
__(9) No information

## D. Marital and Immediate Family

(14) Current marital status at follow-up.

__(1) Single
__(2) Married or cohabiting
__(3) Separated
__(4) Divorced
__(5) Widowed
__(6) Remarried

(15) If the subject has had steady relationship(s), get an estimate of how satisfied and happy he/she has been with their partner(s) over the total follow-up period.

__(0) Just about all of the time
__(1) About 75% of the time
__(2) About 50% of the time
__(3) About 25% of the time
__(4) Seldom or not at all
__(9) No information

(16) Do you have any children, stepchildren or foster children? List their age and sex and note if stepchild or foster child.

| Name | Sex | Age | Comment |
|---|---|---|---|
| _____ | ___ | ____ | _____ |
| _____ | ___ | ____ | _____ |
| _____ | ___ | ____ | _____ |

(17) If a parent, get an estimate of how often the subject has been satisfied with his/her relationship with own children, step-children or foster children.

__(0) Just about all of the time
__(1) About 75% of the time
__(2) About 50% of the time
__(3) About 25% of the time
__(4) Seldom or not at all
__(9) No information

(18) Specify current living situation (place and with whom does the subject live).

__(0) With own family
__(1) With friends
__(2) With family of origin
__(3) Alone
__(4) Hospital

## E. Symptoms and Continuing Problems

(19) Estimate the percentage of the time since index discharge when the subject reported emotional difficulties such as anxiety, depression, or symptoms of emotional tension which he/she experienced before and/or during their index hospitalisation.

__(0) No time
__(1) About 25% of the time
__(2) About 50% of the time
__(3) About 75% of the time
__(4) Just about all of the time
__(9) No information or N/A

(20) If and when the subject experienced any symptoms since index discharge, estimate how much these symptoms interfered with their life (work, social and family life).

__(0) Symptoms never bother the subject
__(1) Symptoms are mild
__(2) Symptoms are moderate
__(3) Symptoms are severe
__(4) Symptoms make the patient unable to function

## F. General Status

(20) Take as "normal" someone who is fully employed, experiencing no symptoms or need for treatment, and engaged meaningfully in family and social relationships. Compared to this "normal", how would the subject rate his/her overall level of functioning since index discharge?

__(0) No impairment
__(1) Some but not much impairment
__(2) Moderate impairment
__(3) A lot of impairment
__(4) Continuous and severe impairment
__(9) No information

(21) Take as "normal" someone who is fully employed, experiencing no symptoms or need for treatment, and engaged meaningfully in family and social relationships. Compared to this "normal", how would the examiner rate the subject's overall level of functioning over the total follow-up period?

__(0) Normal
__(1) 75% of normal
__(2) 50% of normal
__(3) 25% of normal
__(4) No period of normal function
__(9) No information

Other Impressions: